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The National Fruit Magazine of America

AMERICAN  
FRUIT GROWER  
MAGAZINE

Published monthly at 53 West Jackson Blvd., Chicago, Ill.

(Title Registered in United States Patent Office)  
Member of the Audit Bureau of Circulations  
Entered as second-class matter Oct. 17, 1917, at Post Office at Chicago, Ill., under the Act of March 3, 1879

HARRY W. WALKER, General Manager

ADVERTISING REPRESENTATIVES

Eastern Manager A. D. McKINNEY,  
ROGER FISON Post-Dispatch Building  
15 Park Row St. Louis, Mo.  
New York City J. C. BILLINGSLEA  
Pacific Coast Manager 1119 Advertising Bldg.  
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606 Couch Building, 342 Madison Ave.  
Portland, Ore. New York City

Advertising Rates: \$1.75 an Agate Line Flat, or \$24.50 per Inch. Classified, 15c a Word

Subscription: 1 year, 50c; 3 years, \$1; Foreign: 1 year, \$1

Vol. XLV.

JANUARY, 1925.

No. 1.

Greetings of the New Year

by L. H. Bailey

Ex-Dean College of Agriculture, Cornell University

MY BEST word of greeting to the household of the AMERICAN FRUIT GROWER MAGAZINE is that all of you in 1925 may have full crops and of the best quality of which you are capable. This may sound like a trite and commonplace saying, but there is special reason why it now has more than usual significance.

In the generation from which we have just come, we properly put great emphasis in our discussions on the ways in which we could produce fruits, and the effort to increase the yields developed into a technical art of itself. Those discussions followed the conferences and debates of an earlier period on varieties, when a continent was to be conquered and planted and when we did not know what kinds to plant. The great widespread discussions of production merged at the end largely into ways and means of controlling insects and diseases, but this control was only a phase of good production.

A New Epoch Before Us

We are now full in the epoch of marketing and transportation discussions. One may note on the programs of conventions that these subjects have the headway, and that production may be scarcely accorded a place. The discussion of marketing turns largely on organizations, and on ways and means of handling affairs and groups of men. To that extent it lacks the glow of separate personal experience, the element of experiment is absent, the flavor of soil and of tillage is wanting; therefore may we find that the meetings lack something of the old fervor, when one man after another related his experience of the season with a new fruit, a new method, or a test on his own farm under his own hand.

So do we need ever to return to the element of personal experience in the work of one's hands. It is the occupation of the fruit grower to grow more fruit. This should be his abiding enthusiasm, about which he always loves to talk. He thereby exchanges experience with friends and neighbors, and with other participants on the floors of conventions. My choicest memories of fruit growers' conventions are these experience meetings about the raising of fruits. By following the occupation or trade or profession eagerly does a person maintain his enthusiasms and his youth; and, what is more important, he encourages productive effort in himself and in his fellows; thereby does he make himself a man.

Are We Developing a Harmful Philosophy?

We have now become proficient in the filing of protests and the making of complaints. If we do not magnify our ills, we at least make the most of them. We take our occupational ills into politics. I fear we are rapidly developing a political philosophy of dissatisfaction and protest; if we are, disaster is ahead of us, for constructive, happy effort does not come by this means.

The disabilities of the fruit grower, as of other farmers, have been real.

They are yet real. On the other hand, marketing problem. Each generation there are abilities, hopes and advantages that should be given at least an equal consideration and that must be

THIS issue is devoted largely to pruning. Together with the December issue, we believe it covers the pruning of all the important tree fruits and grapes. It is true that some fruits are not treated in particular, but the articles explain the principles involved, and these can be readily adapted to the pruning of fruits not specifically treated.

These articles have been carefully selected, and they have been written by some of the best pruning experts in the country; in fact, some of the authors are largely responsible for the remarkable developments in pruning during the last few years.

Some of the subjects may not look attractive to you, but we suggest that you read and study all of the articles nevertheless. In no branch of fruit growing have more important advances been made in the past few years than in pruning. It is quite clear now that most of us have been pruning wrongly for a long time, due to teachings not founded on solid facts. The articles in this issue present the subject from the new viewpoint. While the general principles are the same, the detailed instructions in the different articles give various shades of opinion. You need to read and study all of the articles in both the December and January issues to gain the fullest information on the subject.

If you will read and study these articles carefully, you will get the latest and most authoritative information on pruning, and you will be able to make some decided improvements in your pruning methods as a result.

allowed generous measure in the balance-sheets of life.

Marketing the Most Serious Problem

All persons are agreed that the present generation must solve the

that it does not even exist as a problem unless there is first adequate production. The fruit grower, as every other farmer, must depend on the land rather than on the market.

The land is still the fundamental

resource. The maintenance of fertility is still the farmer's fundamental problem. The necessity of doing his best for the land is still his fundamental obligation and responsibility.

There can be no combination of men or no understanding to lessen production without unfortunate effect on the temper and public-service quality of the farmer. It is the fruit grower's business or profession to raise fruit, as it is the architect's profession to plan buildings; and the man magnifies his manhood by doing ambitiously that of which he is most capable.

The Fear of Over-Production

We are faced with the fear of over-production. If there is such a danger, the remedy society will demand is that some persons quit farming; the others may then give themselves fully to their work. The war vastly stimulated production. The over-production on any considerable scale will necessarily be of short duration. It does not apply in all crops. Even now we import great staple agricultural products, as coffee and sugar. The United States does not produce as much land-product as it consumes, measured in food values. The commodities destined to over-production—if such there be—will naturally relatively decline, for persons will produce something else or enter some other occupation; this is very different from advising farmers that they should lessen their efforts as men.

Increasing Population an Important Factor

Population is increasing and as a people we are rapidly becoming industrialized. We shall not long be known as an exporting nation of raw foodstuffs and staples. There must be shifts in the farming occupations, and perhaps rather radical changes in the kinds of supplies we produce; but whatever the product may be, let us be determined to find the full reward and joy in producing to the best of our ability. The very marketing studies we now pursue will lessen the danger of what we often call over-production, which is largely the inability to transport commodities to the proper places. I do not overlook the evident difficulties before the farming people or the many discouragements. There is every evidence that we have seen the worst of the present crisis. I have heard the haunting fear of over-production for some 50 years. There are times when we do not see the way out, and when, perhaps, we must wait and be cautious in our efforts. But may we not so formulate our philosophy that we shall study transportation and marketing not as ends in themselves, but in order that we may remove disabilities and see far enough ahead to plan our lives so that we may find the real satisfaction that belongs to the farmer, the satisfaction of bountiful crops?

I sincerely hope that your efforts in 1925 will be rewarded with success and that the present difficulties of fruit growers may speedily be solved. May your crops be good and of such kinds that you can market them at their proper value!

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# Pruning as a Factor in Fruit Growing

by Warren P. Tufts  
University of California

THE AMOUNT and character of the new wood produced during any season may be taken as an index of the conditions existing within a tree. The amount of new vegetation necessary to maintain the correct balance apparently differs with the species in question. In general, it may be said that those fruits, such as the peach, which bear the bulk of their crop on one-year wood, produce a greater amount of new growth than seems necessary with spur producers. In the case of spur producers, those species which have the longest-lived spurs apparently need the least amount of new wood. This seems reasonable, since at least a portion of such new growth must be used for replacement of fruit wood which has outlived its usefulness. The amount of new growth necessary for continued fruitfulness may vary from a few inches, in such fruits as the apple and pear, to two to four feet in the case of the peach. (See Table 1.)

## Transition from Non-Bearing to Bearing

The writer has already drawn attention to the fact that the lighter the pruning of young trees, consistent with the securing of a proper framework of scaffold branches, the greater will be their development and the sooner profitable crops will be produced. The more severely young trees are pruned, the longer they remain unfruitful. Continued heavy cutting reduces the chances for a fruit crop, especially with spur producers, and very materially reduces wood development (Figures 1 and 2).

It is a matter of common experience that with fruit trees which are just beginning good production, it is possible by injudicious heavy cutting during one season so to disturb the delicate balance between wood growth and fruiting that profitable cropping is delayed as much as three or four years. The best judgment must always be exercised when determining the pruning treatment to be given any

the trees are kept within bounds, and maintenance and harvesting costs are reduced.

**Fruit-Bud Formation.**—Sufficient light in all fruit producing parts of the tree is essential in order to secure a uniform distribution of fruit-buds. Pruning is practically the only means of securing favorable light distribution.

Although fruit-buds for any crop begin their development the previous

otherwise the case. It is the common experience of every fruit grower that relatively young, vigorously growing trees uniformly produce fruit of large size.

## Regulation of Size and Quality of the Fruit Crop

Fruit trees normally tend to produce more fruit than can be successfully carried through to maturity, hence it has become an established orchard

practice that the scaffold branches are not exposed to the direct rays of the sun. This would result in sunburning and in subsequent decay and loss. Likewise, the new growth must be sufficient to shade the fruit and prevent sunburn on it, especially in the dry, hot interior valleys.

## Pruning Systems

In recent years there has arisen in California considerable discussion as to the relative merits of the so-called "long" and "short" pruning of deciduous fruit trees. It is rather difficult to draw a definite line of demarcation between these two systems because, with their modifications, they merge into each other.

In brief, it may be said that "short" pruning consists essentially in a more or less severe thinning out accompanied by a heavy heading of the new growth. The method of "long" pruning consists essentially in the removal of the necessary wood by a thinning process and in keeping the tree within bounds by cutting to laterals but leaving the tips of the remaining laterals untouched. This latter system in reality removes somewhat less wood and, as a consequence, many growers have concluded that it really amounts to little or no pruning.

There has been a gradual tendency towards less severe pruning, so that it is now becoming increasingly difficult to distinguish between orchards which are "short" and those which are "long" pruned. Thoughtful orchardists are beginning to realize that the same principles of plant growth and response apply with equal force to all systems of pruning, and that as their ideals with regard to desirable vegetative growth, tonnage, quality, and economy of orchard management become crystallized, so will the different systems at present in use merge into each other.

Mention should be made of several modifications of the so-called short and long systems of pruning at present in vogue in certain sections of California. Undoubtedly many growers who are following in all essential details one of these methods may differ as to the classification here made.

## The Winters System

Figure 3 shows an apricot tree trained by the so-called "Winters System" (sometimes aptly referred to locally as the "Wolfskill Hack"). This flattened expanse of the fruiting area is designed to give better exposure to the sun, thus ripening the fruit earlier. This does not bring about the result desired, however, since the heavy cutting gives rise to succulent vegetative growth early in the season, the shade from which more than offsets the advantage of a flat head. In a test conducted in the Winters district in 1919, trees pruned by thinning produced larger and earlier crops than trees pruned by the standard "Winters System." This method of training is also objectionable in that the upper sides of the main branches are very often badly sunburned, which results in wood decay even though the vegeta-

Tufts, W. P.—"Why Prune Bearing Apricot Trees Heavily?" Mo. Bul. Cal. State Dept. of Agriculture, Vol. VIII, No. 1, pp. 15-22, Fig. 19-17, Jan., 1919.

(Continued on page 37)

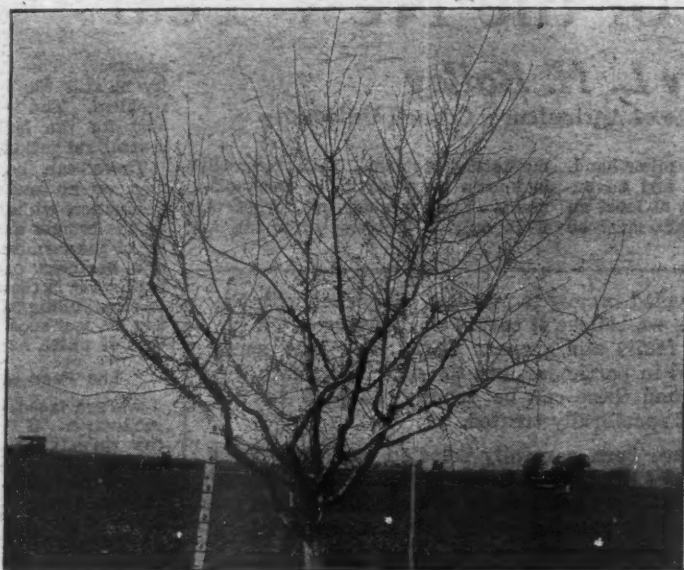


Figure 1—Five-year-old Nonpareil almond tree lightly pruned each year in accordance with the new viewpoint in pruning



Figure 2—Five-year-old Nonpareil almond tree heavily pruned each year. These two trees are located side by side, have received identical treatment aside from pruning, and were photographed from the same distance

summer (June to August), nevertheless, the pruning of bearing trees at that time is of doubtful value as a means of securing greater fruitfulness.

**Regular Pruning.**—The best results are obtained only when the pruning treatment is consistently and regularly carried out over a period of years. It is possible with some species to allow the trees to remain unpruned over a number of years, but the net returns from such treatment are smaller than those secured from annual cutting which insures a constant renewal of fruiting wood. Pruning should be a part of each season's operations even if the amount of wood removed in some instances is comparatively small.

**New Wood and Sizing of Fruit.**—There is apparently a direct relation between new vegetative growth and the ability of the tree to size its fruit. Trees which make a satisfactory wood growth usually bring the fruit crop through with larger sizes than is

practice to reduce this burden somewhat at the annual dormant pruning. On account of fruiting habits, danger from spring frosts, liability to the "June drop," and other factors which may decrease the final crop, it is not feasible to attempt to do all the thinning of fruits with the pruning shears. In order to reduce by any pruning system the number of fruits set, so that there will exist no necessity for hand-thinning, it is necessary to limit the crop produced to less than that which the trees can successfully mature.

Color of the fruit is one of those elusive characteristics which, taken together with size, finish and flavor, constitutes "quality." Light is of prime importance in securing color, but if the tree is rightly "opened up" by pruning, little difficulty will be experienced in this connection. In attempting to secure good color by allowing light to penetrate to the interior of the tree, care must be ex-

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TABLE 1.—DESIRABLE AMOUNTS OF NEW GROWTH FOR BEARING TREES.

Fruits.	Under 10 yrs. of age.		Over 10 yrs. of age.	
	Inches.		Inches.	
Peaches	20 to 40	12 to 30	10 to 24	9 to 18
Apricots	12 to 30	10 to 24	9 to 18	8 to 10
Plums (excepting prunes) and quinces.	10 to 24	9 to 18	8 to 10	
Almonds, prunes, apples, pears, cherries	9 to 15	8 to 10		

particular orchard; this is especially true when the trees are just approaching the bearing age.

As the trees become older and bearing is fully established, many instances will doubtless arise in which heavier pruning will be necessary in order to continue regular bearing and to maintain the necessary wood growth at the same time. To this end supplementary fertilization may be advisable or even necessary.

## Promotion of Fruitfulness

**Distribution of Fruiting Wood.**—Pruning is of value in distributing fruiting wood uniformly throughout the tree, thus securing greater tonnage of better quality. By this means

Tufts, W. P.—Pruning Young Deciduous Fruit Trees—Calif. Expt. Sta. Bul. No. 513, pp. 111-154, fig. 1-24, Oct., 1919.



Figure 3—Winters system of apricot pruning. Note low, spreading top and severity with which new growth has been headed



# Cull Apples and Pruning

by R. H. Roberts  
University of Wisconsin

**A**MONG the many reasons offered for pruning, one frequently finds this generalization: "To give better fruit." What, now, is the meaning of this rather vague statement? Is the poor fruit on a tree due to lack of pruning? Can pruning really help to give better fruit, and how? If so, it would be a great aid to orcharding, as cull apples are the greatest enemy of profits, especially those which find their way onto the market and kill consumption. Cull apples are a much worse competitor of good apples than is any other fruit. To have fruit grown to harvest time and then be off grade is a great loss; to have it compete with the good fruit in price making and dissatisfied consumers is a greater loss. Can pruning reduce this loss?

## Good and Poor Fruit Produced in Different Places

A careful look at an older bearing tree shows that the best fruit and the poorest fruit do not grow in the same place. The better apples are generally in the top—the poorer on the bottom of the tree. Is this due to a light difference? The answer is partly given by noting that younger trees have good fruit throughout the top.

A much more significant difference between the top and bottom of an older tree than that of light is the kind of wood (see Figure 1). The top of a well-grown tree has "vigorous," well-spurred, new branches with abundant foliage and a good annual growth. This is similar to the conditions throughout the younger tree, which bears good fruit all over the top.

The bottoms of older unpruned trees present a very different condition. Even though the top may grow and fruit well, there is not much good wood below, but mostly weak, poorly-spurred branches with few leaves and making poor annual growth. Such wood blossoms too heavily or not at all, sets very few fruits compared to the number of blossoms, and those that ripen do not mature properly but are

small, "green," poorly flavored specimens. They are also often diseased, as spray does not penetrate well into the dense masses of branches common to older unpruned trees. Much of the poor color may be due to poor light conditions. On the other hand, if the tree had been pruned so that the lower

wood had grown like that on the top there would be sufficient light throughout to satisfactorily color the fruit.

## Quality of Fruit Determined on Character of Fruiting Wood

The kind of fruit produced is related to the kind of wood bearing it. It is

not an accident that the good apples are in the top of the tree or the poor apples on the bottom. Good apples come from good wood. Poor apples are borne upon poor wood. Pruning will give better wood. Thus we say culls are largely due to poor pruning or no pruning. Also we say, "Prune, to give better fruit."

Before taking up the question of how pruning can be used to give uniform vegetative wood throughout the tree, we first want to make it clear that pruning should not be used as a substitute for fertilizer by trying to make the tree grow more by reducing the top. Fertilize and cultivate to get the desired growth on the main branches. If no good growth is made by the tree, change the cultural methods. Do not depend upon pruning to replace fertilizer.

The role of pruning on older trees is to maintain good wood all over the tree. If the growth is good over a large part of the tree, this is an index that the culture is good. Prune to get good growth throughout the tree.

The way the tree is started is probably the largest single factor in having strong low branches. How does it happen that the older low branches are so much weaker than the top ones? The trouble starts in the young tree (see Figure 2). Some branches outgrow others. If this condition is not corrected by pruning, later growth is very unequal in diameter and length. In the end, the lower branches grow very little and are overgrown by those higher up, and much weak wood results. If the branches had been kept equal when they were young, they would still be making equal growth when older, and the lower ones would be pushing out into the light; thus lower, flatter trees would result and good fruit would be borne throughout.

## Keep the Trees in Balance

The pruning problem with most older trees is with those which were not kept balanced when younger. In

(Continued on page 26)

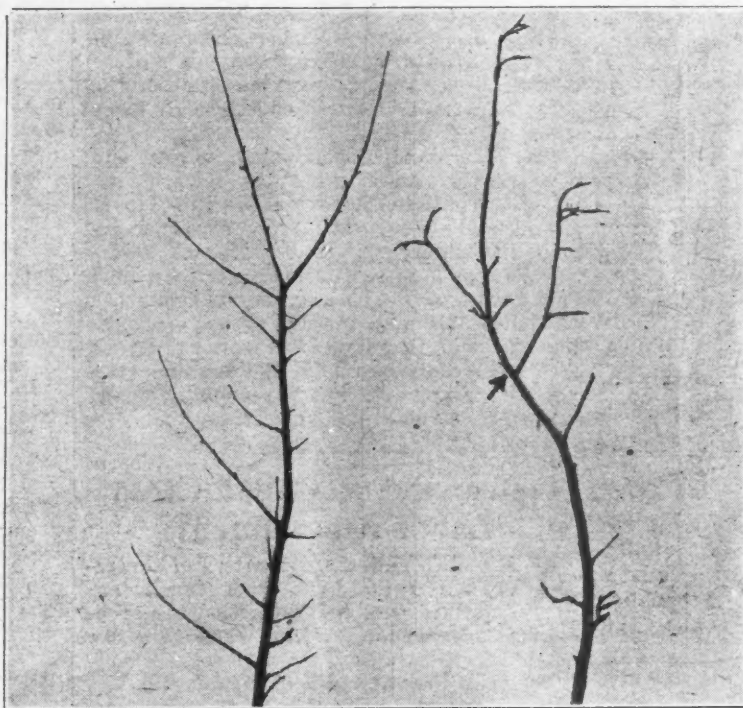


Figure 1—Typical branches from the top (left) and bottom (right) of an old unpruned tree. One branch is four years old and the other is 14. Arrow indicates place to "detail" prune

# Pruning the Concord Grape

by Newton L. Partridge  
Michigan Agricultural College

**T**HE FRUIT of the Concord grape is produced, almost entirely, from buds on canes of the preceding season's growth. Nearly all the buds on growth of that type will produce fruit-bearing shoots, if the conditions for growth are favorable the following spring. As a matter of fact, a varying proportion of the buds will lie dormant, owing to the natural tendency of growth to start from the tip of last year's growth rather than from the base. A small portion of the shoots on the vine may prove to be barren at harvest time. Sometimes this condition is due to a failure of the shoot to produce a blossom cluster, but more often it seems to be due to some accident or condition that caused the loss of the cluster after blooming time.

There are differences in the fruiting capacity of the buds on a single cane. Those near the base of the cane are much less fruitful than those a little farther out on the cane, and beyond this region of most fruitful buds, they are again somewhat less fruitful. The exact location of the highly productive area on a cane varies somewhat, depending upon the type of growth which it made. On the best fruiting wood, the fourth to the ninth buds are usually the most productive. Basal buds are less fruitful.

The most fruitful buds will generally produce bunches of fruit of a larger

size than the less productive ones. Consequently, the type of training followed should permit the use of canes long enough to utilize their best portion. If the canes are pruned too short, the poorer buds are retained and the better ones are removed. Any long-cane system of training, properly followed, will permit the vine to produce the fruit it is able to bear. The four-cane Kniffen system, illustrated in Figure 1, is more generally used than any other method of training because of the cheapness of the tying and the ease with which good spraying is done. However, some of the

other systems seem to be peculiarly adapted to the conditions of special localities and are there used with entire satisfaction.

## The Kniffen System of Pruning and Training

The directions usually given for pruning and training a vine in accordance with the four-cane Kniffen system are as follows:

First, select four canes of the best type of fruiting wood which are to be trained, one in either direction along each of the two wires of the trellis. The fruiting canes selected should either grow from the trunk itself, or from a point on the arm as close to the trunk as the desired type of wood may be found. It is often impossible

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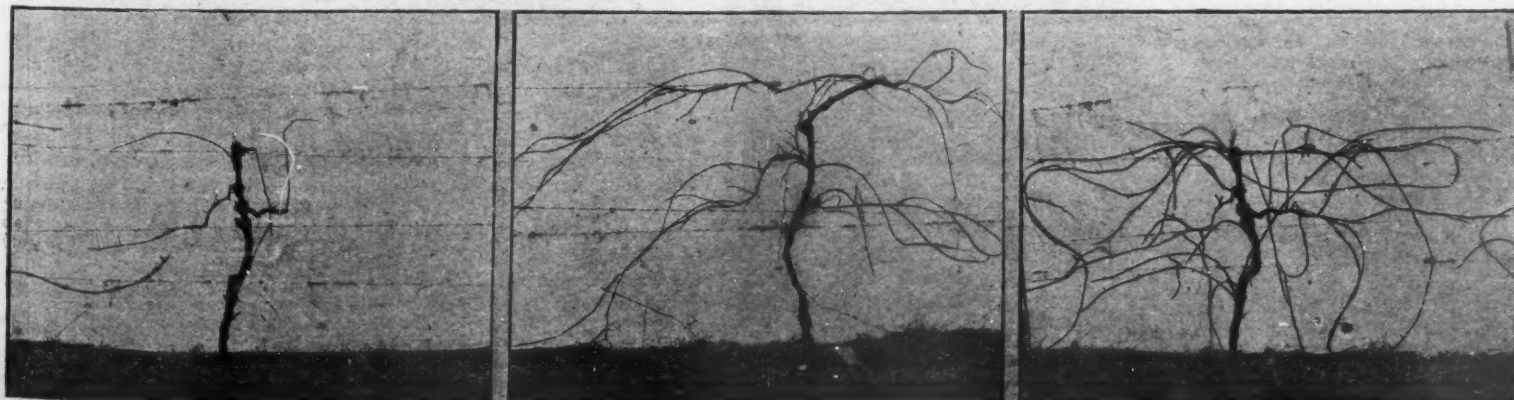


Figure 1—A vine pruned for training by the four-cane Kniffen system. Figure 2—A vine weakened by overbearing, induced by too light pruning. Figure 3—A moderately vigorous vine showing the effects of proper treatment



# American Fruit Grower Magazine

Established 1880.

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## Heads You Win, Tails I Lose

**F**RUIT growers and farmers are much interested in any proposition that vitally affects the public because they themselves constitute such a large part of the public. The Howell-Barkley bill, which is before Congress at the present session, is a proposition of this kind.

The Transportation Act of 1920 created a Labor Railway Board which consists of nine members, three representing the railways, three representing the railroad employees, and three representing the public. This board, while probably not perfect; has rendered excellent service. Its existence has encouraged the settlement of railroad labor differences without strikes, and it has, therefore, tended to protect the interests of the public in differences between the railroads and their employees.

The important point about the board is that it contains three representatives of the public. Thus, the public holds the balance of power. While the railroads and employees are not absolutely bound to follow the dictates of the board, they have done so in practically every case—it would have been unwise psychology for them not to do so.

The Howell-Barkley bill, which is a product of labor union leaders, will, if passed, abolish the Railway Labor Board and establish in its place four National Boards of Adjustment. In addition, a Board of Mediation and Conciliation would be created. These boards would be composed of railroad and employee representatives only; the public would have no representation whatever.

Under the bill, labor differences are to be referred to one of the four national boards. If the board cannot reach a settlement, the matter is to be referred to the Board of Mediation. If the Board of Mediation cannot adjust the matter, the question is to be referred to a Board of Arbitration, which is to be appointed jointly by the railroads, the employees and the Board of Mediation. The findings of the latter body are to become a court judgment.

In the practical operation of the law, the findings of the Board of Arbitration would become binding on the railroads but not on the employees, for the bill specifically permits employees to strike if not satisfied with conditions. This provision would, in the last

resort, provide employees a way out of any decision, but a similar way out is not provided for the railroads.

The bill provides, furthermore, for employee representation on the boards only from the standard railway labor unions, which represent only about 50 per cent of the railway employees of the country. Apparently, it is the object of this provision to force all employees to join the standard unions and to force the closed shop on the railroads.

One of the big problems of agriculture is that of securing lower costs of transportation. Since labor costs constitute about 60 per cent of the operating expenses of railroads, we cannot expect much, if any, relief in this direction until labor costs are reduced along with other expenses. It will be difficult, under the practical operation of the proposed law, to secure reductions in labor costs.

From the standpoint of public interest and of agriculture, it seems to us that the proposed law is one of these "heads you win, tails I lose" affairs, and we suggest that every reader explain the situation to his friends and neighbors so that local sentiment can be cultivated against the bill. You and your friends, both as individuals and through your organizations, should then take the matter up with your representatives and senators in Congress. Prompt action is paramount, for the bill may come to a final vote at any time.

## Defeat the So-Called Child Labor Amendment

**A**PPARENTLY the supporters of the so-called child labor amendment are alarmed over the opposition the proposition is meeting. At any rate, they are beginning to assume a more conciliatory attitude than they assumed at Washington last spring. Among other things, they are now pointing out that the amendment is not a law in itself but merely gives Congress the right to pass laws on the subject. Again, they are saying that Congress will never attempt to regulate child labor in agriculture and horticulture.

Their arguments will not hold water in view of the facts in the case. If it was not intended that the amendment should apply to agriculture, why was the word "labor" used instead of "employment?" It was used, as the records definitely show, in order that the amendment would definitely apply to children working without wages on farms for their parents. Furthermore, why did the supporters of the measure not let the two amendments pass which would have exempted agriculture from the operations of the law? They vigorously opposed these amendments and succeeded in killing them. The records leave no doubt as to the intentions to make the amendment apply to agriculture.

As to the statements that Congress will not pass laws regulating child labor on farms, we have serious doubts. Too often laws are passed for political reasons and without regard to the merits or demerits of the bills. Every year some poor laws are passed because of powerful influences behind them, and many meritorious bills fail because of the absence of powerful influences. We doubt very much if the majority of our Congressmen favored the amendment from an individual standpoint when the question was before Congress.

The supporters of the amendment claim that Congress can be relied upon never to pass laws that will prove a hardship to agriculture. We think differently. If the amendment is passed, it is our opinion that its supporters will have no peace of mind until they secure the passage of laws by Congress that will apply to agriculture and horticulture in the fullest sense. With the twentieth amendment on the books, it will be far easier for them

to secure the passage of such laws than it has been to bring the amendment up to its present status.

Again we urge our readers to use their influence to prevent ratification of this amendment by their state legislatures. Bear in mind that no way is provided by which an amendment to the Federal Constitution can be repealed.

## Thank You

**T**HE RESPONSE to our request for cooperation was very fine indeed. Numerous readers sent us addresses of their neighbors and friends interested in fruit growing. No doubt many more will do so, for it is yet early. Our Circulation Manager has already received subscriptions from some of these prospects, and, no doubt, he will be able to "land" most of them.

On the strength of the increased subscriptions obtained and in prospect, and in view of the better business outlook in general, we are beginning with this issue to use better paper than formerly, and we are spending more money on the pictures. Thus, the illustrations will be clearer in the future and the print will be easier to read. We shall give the closest attention possible to the selection of material.

In addition to the direct benefit you will get in the form of a better magazine, there is an important indirect benefit you will obtain by helping to enlarge our family of readers. The fruit industry needs an agency which speaks for it in a large way, one which is keeping growers in touch with developments which affect them, and one which is helping to educate growers toward unity of thought. The more we can get growers to thinking in the same way, the easier it will be to solve some of the big problems before the industry. We believe that the American Fruit Grower Magazine, because of its dominant position in the fruit field, is assisting materially in these important matters. Thus, by helping us to enlarge the family of readers, you are helping to place the industry on a higher plane. This will help you and every other grower.

While many readers responded to our request, we know that many more intended to do so but did not attend to the matter at once and then forgot it. If you are one who did not send us a list in December, why wouldn't it be a good thing to send a list now, before you overlook it again? Your list will be a welcome Christmas present to us, even though a little late. We shall try in return to give you a better and larger magazine in 1925 and to help improve the industry in general.

## Who Does His Own Selling?

**C**O-OPERATIVE organizers often meet such arguments as these: "No, I'm not going to turn my marketing over to any association. I haven't many rights any more, but that is one of them, and I am going to sell my own fruit."

What man is it who really does his own selling, the one who is not in position himself to know the market situation and who turns his products over to commission men, brokers and speculative buyers, or the one who turns them over to a grower-owned and grower-controlled organization, directed by officers elected by him and managed by skilled employees responsible only to the growers and who are in position to know market conditions?

Think it over. There is only one conclusion you can draw.

**B**ECAUSE of the urgent need of space for other material in the January and February issues, the names of the winners in the prize contest and the winning story will be printed in the March issue.



# Pruning the Citrus Tree

by Robert W. Hodgson  
University of California

UNTIL recently there has been the widest divergence of opinion concerning the pruning of citrus trees. In the absence of definite data, it is small wonder that so great a variation in opinion has existed. During the past 35 years the pendulum has several times swung from one extreme to the other—from severe pruning to little or no pruning. And each time it has swung to light treatment, a larger number of growers have become convinced of the soundness of moderation in pruning citrus, or to put it the other way, of the injurious results of heavy pruning.

During recent years, and especially since the accumulation of data clearly showing decrease in production and lowered vigor of growth from severe pruning, the tendency has been steadily toward lighter treatment. This movement has been on the whole a very wholesome one. However, the tendency is always to swing from one extreme to the other and many growers are now seriously questioning the advisability of any pruning treatment whatever. While the tendency toward less pruning is amply justified, yet to discontinue pruning altogether is probably going too far. There is sufficient evidence to warrant the continuance of light or moderate pruning as a means of efficient and economical production of citrus fruits.

## The Two Principal Objects of Pruning

With all fruit trees the two principal objects of pruning are (1) to give the trees a desired shape, and (2) to establish and maintain that relation between vegetative and reproductive tendencies which produces optimum results for the grower.

In the case of the first object, this treatment is generally called "training," and as soon as a satisfactory form has been developed, little further attention to this object is required. The attainment of the second object, however, varies appreciably with the different classes of fruits and is materially influenced by the interest of the grower. In the case of the deciduous fruits, this object is frequently not so much quantity of fruit as the production of fruit of a specified size or quality. In the case of the citrus fruits, this subject is primarily that of amount of fruit, as there is little evidence that either size or quality, except as related to disease control, can be appreciably influenced by pruning.

To summarize for the citrus fruits, the two principal objects of pruning are: (1) the establishment of a strong framework system, which, fortunately, is rather easily obtained due to the natural tendency of citrus trees, and (2) the maintenance of a balance between vegetable vigor and fruitfulness which is conducive to the economical production of maximum crops and at the same time consistent with the maintenance of tree health and longevity.

## Some Reasons for Pruning Citrus Trees

The reasons for pruning citrus trees are primarily economic in character and have to do largely with cost of production or efficient use of the bearing surface. Unpruned trees located on good soil are likely to become too large for greatest efficiency in handling. It is generally admitted that there is a certain size of tree above which costs of production increase faster than the returns from the additional fruit produced. At the low prices prevailing for citrus fruits, and which seem likely to continue for some time to come, it does not pay to pick fruit from tall trees. Other costs which mount notably with size and height of trees are those of fumigation and spraying. While many growers have not yet faced the handling of excessively large trees, there are plenty of old orchards where this problem is a very pressing one and apparently capable of solution only by means of judicious pruning.

Again, if not pruned, citrus trees usually become so dense that sunlight

is excluded from the interior parts, with a consequent decline in production there. The fruit-bearing surface of such trees is not sufficiently utilized, the fruit being produced mainly on the outer parts as a "shell" crop. As the older fruit wood dies, the newer wood develops further out where

## Pruning the Young Tree

Pruning treatment during the early years should be of such a character as to encourage the development of a strong and vigorous tree with a large bearing surface which will come into fruiting at an early age. Experience



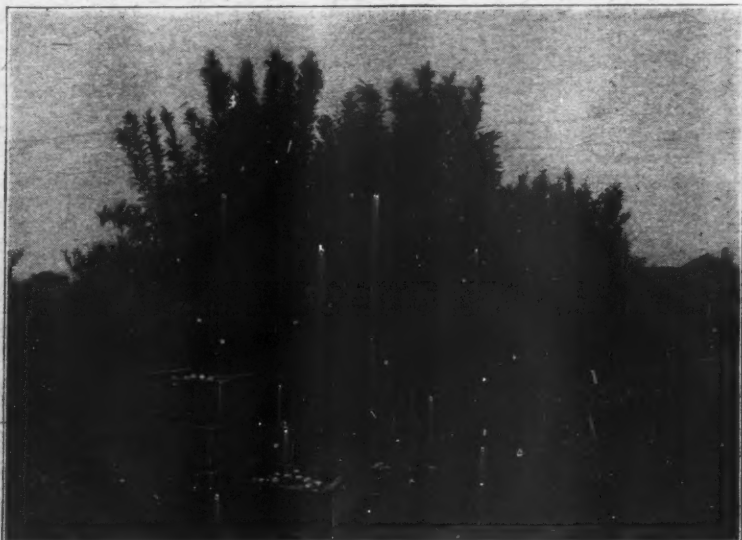
These bearing lemon trees are conspicuous examples of the effects of too severe heading back

sunlight is available and the result is that each year the tendency is to produce the fruit farther away from the head of the tree. Such fruit is subject to wind-scarring, sunburn, fumigation and spray injury, and in general is of poorer quality than interior fruit. By means of judicious pruning, designed to keep the trees reasonably open, it is possible to produce as much or more fruit of distinctly better average quality, on a tree considerably smaller, than is the case where no pruning is done.

An additional reason in favor of some pruning is the fact, as yet un-

indicates clearly that the accomplishment of these objects is best attained by a minimum of pruning. There is probably no worse mistake than severe pruning during the first five years. Such a practice can mean only one thing—dwarfed trees and delayed fruiting.

Only such pruning should be practiced as will encourage the development of a strong framework and which will curb unusually vigorous vegetative shoots. It is particularly important that the small hanging branches on the lower part of the trees be left, as these produce most



The result of too much heading back of bearing lemon trees. Trees show too much vegetative growth and are expensive to prune

explained, that many trees if unpruned develop largely to vegetative types of growth which, experience indicates, are less productive than the slower growing, less vegetative fruit wood.

The necessity of maintaining the trees in a mechanical condition so as to withstand the severe wind storms which occur occasionally in all California citrus districts and which cause heavy losses, is also an additional reason why a certain amount of pruning is necessary.

of the fruit during the first few years. The removal of these branches, which has been extensively practiced in the past, has been without doubt one of the principal causes of loss in the young orchard. A good rule to follow with all citrus trees, but especially with young trees, is when in doubt leave it. One can always take off growth, but one cannot put it back.

## Pruning the Bearing Tree

If properly pruned and well situated,

the young citrus tree should come into profitable bearing at from four to six years of age, with a well developed framework system and good size and vigor. During the first few years of bearing, pruning should be confined to the removal of suckers from the trunk and framework branches and the elimination of the rank-growing water sprout "riders" from the outer parts of the tree, with the gradual removal of the first fruiting shoots from the lower part of the tree as these fall. Suckers and water sprouts should be removed while still small and before they seriously drain the vitality of the tree. They should be taken out two or three times during the growing season.

For the next four or five years the bearing tree will not require much pruning, but it should be given a semi-annual inspection and such pruning treatment as its condition demands. From that time on the need for pruning usually increases gradually somewhat, although light to moderate pruning should always be the rule. Extremist methods practiced on healthy bearing trees are certain to result disastrously. Moderation in treatment should always prevail.

## General Thinning Necessary

As the trees age, it becomes increasingly important to regulate the light supply if healthy fruiting wood is to be maintained in the interior parts. This requires thinning of the outer shell of foliage, which some pruners accomplish by the removal of entire branches rather than by a general thinning of the fruiting brush. Care must be taken, however, not to leave large holes, particularly in the tops of the trees, or injury from sunburn may result. The removal of large branches is almost certain to be followed by the production of suckers in the vicinity of the cuts made. These suckers should be carefully thinned or shortened.

Keeping the trees reasonably open to light bears an important relation not only to the maintenance of healthy interior fruiting wood but also to the occurrence of dead wood. If the trees are kept in good condition, this will be reduced to a minimum. Almost invariably a certain amount of dead wood will occur and it is desirable to remove this, since such removal has frequently been noted to result in a general stimulation of the trees. The removal of dead wood is not a matter of vital importance, however, since it apparently undergoes a natural shedding process which prevents the dead wood from increasing beyond a certain point.

## Renew the Bearing Area

As the trees grow older, it becomes necessary to provide for the gradual renewal of the bearing area through the occasional removal of older branches. The removal of these parts should be done gradually, however, or vigorous suckering is certain to result. The first branches to lose the bearing habit are usually the lower ones, which are gradually crowded out by the new growth from above. These should be taken out as soon as their condition indicates the passing of their usefulness. The removal of such branches is generally known as "under-cutting." It is not desirable to take out bodily old branches from the tops of the trees, for the resulting tendency is not to produce a new limb but to fill up the opening by the growth of new wood from adjacent limbs, and if continued this process will result in diminishing the bearing surface as well as destroying the symmetry of the tree. By far the better way is to remove several of the smaller branches, making all cuts so that the sap flow is readily diverted into other branches. "Stubbing" such branches should be studiously avoided, as it results in a thicket of sucker shoots and is just about as undesirable as the original condition.

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# Pruning Apple Trees for Yield and Quality

by Clayton L. Long  
Oregon Agricultural College

**F**RUIT trees properly pruned from the year they are set in the orchard until they have passed their age of usefulness will produce more and better fruit than the unpruned or improperly pruned ones. They will produce fruit more economically because pruning facilitates the culture, spraying, thinning of the fruit, and even the future pruning.

Pruning consists in the removal of superfluous parts of trees in order to assist in the control and direction of remaining parts and to facilitate other orchard practices. Trees to produce good crops economically must be vigorous, large, strong and spreading. It is the vigorous trees that produce annual crops. It is the large, vigorous, and strong trees that produce large annual crops with the least breakage and the least need of propping. It is the large, vigorous, strong, spreading trees that produce large, annual crops of fruit carrying the best combination of size and color.

## Good Soils For Good Results

No pruning discussion would be complete without a word concerning orchard soils. The moisture and fertility supplied by the soil is the big factor in deciding how large those trees must be before they will come into bearing. Trees planted on poor or shallow soils will come into bearing earlier than those on good, deep soils. They will never reach the size nor produce as large crops as trees planted on suitable soils. No kind or amount of pruning will overcome the handicap of an unfortunate selection of soil. The soil, to be a good orchard soil, should be sufficiently fertile, deep, and well-drained to supply enough moisture and plant food to maintain the vigor of a large tree and mature its large annual crop.

## Build the Trees Right

Trees expected to produce crops economically for a long time should not be haphazardly built. They must first be strong. No weak crotches should be permitted to form. The four to six scaffold branches should be well distributed upon the trunk

of each of the trees. The trunks should extend from three to five feet above their lowest branches, with the other branches evenly distributed up and down and evenly whorled around them. When a prevailing wind must be considered, the topmost branch in each tree may be very advantageously formed from the central lead or trunk, using the pressure of the wind

should be kept on the outer side of the lead of each branch. In this way the future crops will tend to open up and spread each branch, giving the desired broad-spreading trees. Only a few strong secondary branches should be permitted to form on each main branch and they should be well away from the trunk of the tree and well apart upon the branch. Fruit hang-

main branches are about equal in size. This condition may be attained by cutting back and thinning out the stronger growing branches for the first two or three years, and by thinning out the stronger growing ones on older trees, leaving about the same amount of leaf bearing surface upon each branch at the beginning of each growing season. This is one of the most important reasons for pruning young trees.

## Pruning for Spread

Trees should be broad and spreading to be able to carry a large crop of fruit which can be economically cared for and harvested. They must also be strong enough to stand up under the load of fruit. Their branches cannot be again and again "benched off" at laterals in vain efforts to produce spread. The natural and economical way to secure this spread is through the weight of the fruit. Build the branch in such a way that the pull of the crop will all be in one general direction. The spreading will be gradual as the trees come into bearing, and the branches will strengthen with each successive crop as they come down. The breakage will be very small. Keep the branches loosely built, with the bulk of the bearing surface on the outer side, and broad spreading trees will result.

Our first problem is, of course, to build good strong trees; our second to equip them with fruiting parts and continue to extend the building of the trees; and finally, after our trees have reached mature size, we wish to maintain them at maximum efficiency. Let us at this time consider the influence of pruning on the functioning of the tree.

## Balancing the Root and Top at Pruning Time

Pruning young trees always has a dwarfing effect upon the trees. Top pruning retards root growth until the top has again caught up with the root. Root pruning retards top growth until the roots removed have been replaced. In neither case, after this balance has

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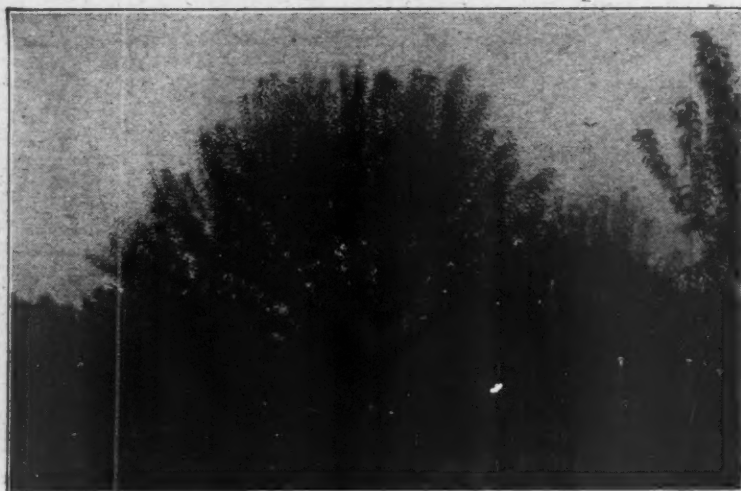


Figure 1—A Spitznburg apple tree which yielded slightly over one box of fruit in 1922. It has been headed back and thinned every year since planted in 1911

and the weight of the crop to pull it into place away from the wind.

## Each Branch Has a Lead

Care in training each main branch is essential. A midrib or predominant lead should be encouraged, yet even forced, in each branch. No twin or competing parts should be permitted. All strong secondary branching

ers and spurs should be encouraged on all sides of both the main and the secondary branches. Short, broad-angled shoots will usually develop into fruit hangers unless the tree is too severely pruned.

## Maintain Balance Between Branches

The most satisfactory trees to handle will be those in which the four to six

# The Renovation of Worn-out Orchards

by U. P. Hedrick  
New York Agricultural Experiment Station

**I**N EVERY fruit region there are orchards that need to be rejuvenated, made over, or repaired. These are not always old orchards. Some have not reached their prime, and some have never borne a barrel of fruit. Many such orchards have not had a chance through neglect, and others have suffered at the hands of ignorant owners.

How may one tell that trees are not up to the mark? The color of the foliage is as accurate an index of health in a tree as the beat of the pulse is in a human. Something is wrong when the leaves of any tree do not show normal green. Few and small leaves show that a tree is in a decrepit condition. Short, scant growth is another bad sign. Finally, dead branches in the top is a sure indication that unless radical measures are taken to restore vigor in a tree it will soon go to the brush-pile.

Trees wear out and need renovation through many causes. No two orchards have the same ills to the same degree, but several of the ills of trees are usually common to all worn-out orchards. Now to know the cause of the run-down condition of an orchard must usually take precedence over the application of a cure, so that cause and cure must be discussed together.

## Poor Trees

Some orchards are doomed from the very start through the great misfortune of setting poor trees. A dingy, bruised, spindling, diseased, or otherwise unhappy waif of a tree at setting will never make a good orchard plant. Many such trees cannot be renovated, and if they fail to respond to good

grooming in their first few years, they may as well come out.

The lack of affinity between stock and graft is another cause of failure.

The Plant Must Be Adapted to Its Environment

A tree is always at the mercy of its environment. Every fruit region has



An orchard in need of cultivation. The sparse foliage and short annual growth indicate a lack of vigor

Plums are grafted on any one of several stocks; in eastern orchards at least they grow longest and best on the Myrobalan. The peach thrives best on a native seedling; the cherry on Mazzard; and the apple and pear soon wear out on dwarfing stocks.

a list of varieties peculiar to itself. Winesap will not thrive in New York, and McIntosh is not happy in Virginia. So with every fruit and every variety. Many, many orchard failures are due to misfits in environment. When a bad beginning is made through

choosing varieties unsuited to soil or climate, the mistake may be corrected in part by grafting over to sorts known to succeed, but this is true only if the trees to be grafted are vigorous, and never unless the grafter knows his art and can furnish the proper care afterward.

## Drainage

Stagnant water at the roots is one of the chief causes of premature age and decrepitude in trees. There is seldom in any American fruit-region a yearly excess of water. In most regions the total rainfall is barely sufficient, but the distribution of rainfall is often faulty. An excess of water at a time when the using power of a tree is low, as in the spring, keeps out oxygen, kills beneficial bacteria, and chills the roots, thus slowly killing the plant.

The remedy suggests itself. Put in drains and keep the water moving, and all should soon be well with soil and trees. Draining soggy land is often a miraculous cure for a sick orchard. The plants send out new roots and in a few years renewed life and fresh vigor show in trunk, branch, twig and leaf, and barren trees become fruitful. In no other way can the recuperative power of trees be made so manifest as by removing the vital check of stagnant water.

## The Deleterious Effect of Grass

A sod mulch may be advisable in some orchards, but in the great majority, sod, however managed, robs the trees of water and food; entices the rootlets to the surface to be killed by droughts; furnishes breeding places

(Concluded on page 10)



# The Young Dewberry, a New Hybrid Variety

by George M. Darrow  
Bureau of Plant Industry

A SINGLE variety of dewberry, the *Lucretia*, forms the basis for the commercial dewberry industry of the United States. Few shipments are made of any other sort, though two others, the *Gardena* and *Mayes* (Austin, Austin Mayes), are raised for the local market, the *Gardena* in southern California and the *Mayes* chiefly in eastern Texas. The *Lucretia* was also the first variety to be introduced into general cultivation, being brought to general notice about 1886. Many varieties have been introduced since, but none has succeeded in replacing it.

Neither the *Lucretia* nor the *Gardena* are grown to any extent on the Pacific Coast. This is, perhaps, largely because of the popularity there of the *Logan* blackberry, a stronger growing variety, the canes of which become trailing. The fruit of the *Logan* ripens with the dewberries, and, though tart for eating fresh, is unsurpassed for culinary purposes, for canning, for jams, and for the making of a fresh fruit drink. The *Logan* has been tried in thousands of places east of the Rocky Mountains but has never succeeded, the plants rarely surviving more than two seasons.

## Origin of the Young Dewberry

In 1896, B. M. Young, having become acquainted with the *Logan* and the *Phenomenal* (very similar to the *Logan*) in California, attempted to grow them at his home in southern Louisiana, but without success. When convinced that he could not succeed with them under the conditions there, he crossed the *Phenomenal* with the *Mayes* dewberry in an attempt to secure a berry similar to the *Logan*, but adapted to eastern conditions. In his first lot of several hundred seedlings which were raised about 1905, there was one plant markedly superior, resembling the "*Mayes* in growth but stronger. . . . The fruit was large and of *Loganberry* flavor." Later Mr. Young, because of business interests, discarded it, but he had previously given plants to F. Jones, who had a nursery at Jeanerette, La. Mr. Jones later moved to Lancaster, Pa., taking plants of it with him. In the fall of 1921 he sent plants to the United States Department of Agriculture for testing. These came into fruiting in 1924 at the United States Horticultural Field Station at Bell (Glen Dale post office), Maryland, where they have attracted very favorable attention. It is here named the "*Young*" dewberry for the originator and with his consent.

## Characterization

During the spring of 1924, plants of this dewberry were sent to many experiment stations and co-operators for testing. Some of these trials were visited during September, 1924, in order to note its disease resistance in southern states. In addition a planting of several thousand vines at Fairhope, Ala., south of Mobile, which has been in fruiting for two or three years, was visited. Certain qualities make it particularly valuable, and the following are some of them:

As grown in the eastern and southern states, the plants are more vigorous than other dewberries, producing numerous canes of larger size and somewhat longer than those of the *Lucretia*, also rooting at the tips more freely and making stronger plants than the latter sort; canes in Louisiana, Alabama, and at Bell, Md., free from anthracnose and other cane diseases; hardly wherever tested in the South; foliage entirely free from the common leaf spot; buds affected by the "double blossom" disease.

Fruit larger than that of the *Lucretia* or *Logan* at Bell, Md. (Figures 1 and 2), much firmer than the *Logan* when ripe enough for table use; attractive deep wine-colored; much sweeter and richer than the *Logan* or *Lucretia* when ripe and of exceptionally high dessert quality; expressed juice equal to or superior to that of the *Logan*; seeds larger than those of the *Logan*; ripens about with the *Lucretia* but continues to ripen for 10 days thereafter. It is suggested for trial wherever dewberries are grown but especially in the southeastern states.

Letter from B. M. Young, Morgan City, La., dated August 13, 1919.

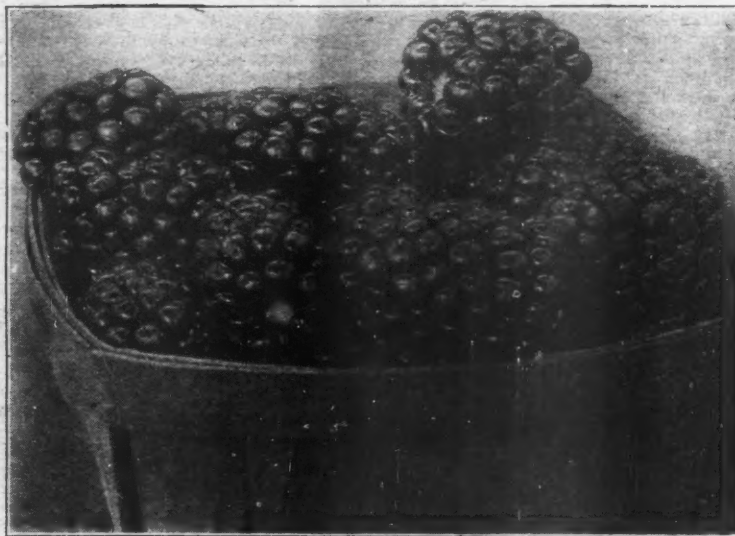


Figure 1—Plait basket of Young dewberry

The disease resistance of the foliage, its apparent resistance to anthracnose and the superb quality of its fruit for dessert, culinary purposes, and as a source of a fresh fruit beverage make it especially promising as a commercial and home garden fruit. No weak points have yet appeared

Though the Young dewberry has been grown for only a few seasons at Bell, Md., some indications of its disease resistance have been obtained. Its foliage there and elsewhere has been entirely free from leaf spot (*Septoria rubi*), which affects and sometimes defoliates the *Lucretia*



Figure 2—Flower cluster of the Young dewberry

in the variety. Its hardiness north of Maryland has yet to be proved, but from what is known of its parents, it is doubtful if it will be harder than *Lucretia*. The seeds are larger than those of the *Logan*, which are small, but the proportion of pulp to seed is probably greater than in the *Logan*.

dewberry. At the Coastal Plain Branch Station at Willard, N. C., plants of it entirely clean were growing beside those of the *Lucretia* which had the basal portions of their canes defoliated by this disease. Another leaf spot (*Phyllosticta variabilis*), occurring only in the extreme South, has been

found on the Young dewberry in southern Georgia and Alabama, but it does not appear to be serious.

No anthracnose (*Gloeosporium venetum*) has been found on the Young, though the *Lucretia* nearby has been seriously affected. The "double blossom," a fungus disease, has been found on it at Bell, Md., and at Fairhope, Ala. This disease need not be serious, as it is entirely controlled by picking off affected buds in early spring or by the usual practice of southern dewberry growers of removing the canes of the *Lucretia*, both old and new, after the picking season is over. No other diseases have been found on the Young dewberry.

## Technical Description

The following is a technical description of the Young dewberry:

Fruits: Ovoid-oblong, truncate, large, sometimes doubling, 1.2 centimeters (1.2 inches) long, 2.2 centimeters (0.9 inches) wide, usually borne in corymbiform racemes of 3 to 6 fruits; drupelets large, glossy, dark wine color, (burnt lake according to Ridgeway); pedicels long, prickly, not glandular, pilose; core melting, separating readily from the calyx; calyx large, tomentose, not glandular; flesh very juicy; seeds large, nearly as large as those of *Lucretia*; flavor subacid, much sweeter than that of the *Logan*, rich; quality excellent; season with the *Lucretia* but longer.

Bush: Trailing, vigorous, propagating by tips in September; productive, resistant to the common leaf spot (*Septoria rubi*), somewhat susceptible at least to the southern leaf spot (*Cercospora* sp.), at Fairhope, Ala., probably resistant to anthracnose (*Gloeosporium venetum*), susceptible to "double blossom" disease.

Canes: Stout and longer than those of *Lucretia*, (9-12 feet long at Bell, Md.); numerous, terete, red; prickles rather small, variable in size and length, numerous, sharp, purplish, slender and usually spreading.

Leaves: Turion leaves 3 or 5 foliolate, the terminal one sometimes variously lobed or divided, doubly serrate, usually broader than those of the *Lucretia*, basal leaflets 1 1/2 by 2 1/2 inches, second pair 2 1/2 by 3 1/2 inches, terminal 2 1/2 by 3 1/2, softly hairy beneath, slightly so above; petiole prickly; flowers large, white (Figure 3).

In 1919, Mr. Jones sent 23 plants of the Young dewberry to a grower at Fairhope, Ala., who later made a quite favorable report regarding the performance of the variety.

## Training

At Bell, Md., the canes of the Young dewberry have been trained to stakes projecting about five and one-half feet above ground in the same manner as are those of the *Lucretia* and other dewberries (see Figure 4). The canes are left on the ground till spring, when they are wound in spiral fashion about the stakes and tied about midway and at the top. The ends are cut off at the top of the stake. This system has been entirely satisfactory and suggests for this variety the same practices as are used in growing dewberries in any section. Briefly, this involves training to a wire trellis three and one-half to four and one-half feet high in southwestern Michigan and the Hudson River Valley in New York, and to stakes four to five feet high in southern New Jersey, and five and one-half feet high south of New Jersey.

## Propagation

The Young dewberry propagates freely by rooting at the tips in September and October at Bell, Md. It propagates in this manner more freely and the resulting plants are better developed than any other dewberry yet tested. In 1923, 249 tips were secured from 31 plants, some of which were one-year-old plants. Propagating this variety from root cuttings, as is practiced with other sorts, has not been tried.

## The Logan Blackberry and Its Hybrids

Phenomenal, the seed-parent of the Young, closely resembles the *Logan*. It has been little used in breeding. The *Logan*, however, has been used by experiment stations and private breeders of the United States and England. In this country no success has yet attended efforts to hybridize it. In England, however, one hybrid, the *Laxtonberry*, is in the trade. This hybrid be-

(Concluded on page 33)

Figure 2—Young dewberry to left, *Lucretia* to right



# Commercial Production of Fruit Concentrates

by J. H. Irish  
University of California

**T**HE EXPERIENCES of the past few years show that one or the other of two conditions faces the fruit industry. Either growers are producing too much fruit or consumers are not using as much fruit as they should. Studies of fruit production in relation to population show that people are consuming fairly small quantities of fruit. Physicians and dieticians claim that people should use more fruits than they do. That consumption of fruit can be increased is well proved by the citrus, raisin and walnut growers of California, all of whom have doubled the per capita consumption of their products within the last 10 to 16 years. There are many indications that the problem of the fruit industry is one of under-consumption rather than one of over-production.

The reason prices have not been more satisfactory in recent years is because the demand has not been strong enough in relation to the supply. It is quite apparent that if we could increase the demand by creating new outlets for large quantities of fruit, the whole situation would be relieved and better prices would be received by growers.

## Must Keep Future in Mind

In considering the problem, we must keep in mind the future as well as the present. The districts in which fruit is now being produced commercially could readily be extended if the demand for fruits was increased. The districts adapted for citrus culture and pomegranates, for instance, are limited by climatic conditions, but there is still plenty of room for expansion in these districts. There are new sections adapted for producing large quantities of some fruits which can and probably will be developed in time. This is true in the case of apples, peaches, pears, strawberries, brambles and many varieties of grapes. The production of small fruits could be increased rapidly if there was a demand to justify the same.

In view of the fact that we cannot control production in fruit culture, we must also bear in mind the fact that in some seasons there will always be a surplus of some fruits and that in all seasons we shall have cull and off-grade products. In 1923, for instance, there was an estimated surplus of 22,000,000 bushels of apples produced. The large quantities of citrus fruits and apples which are unmarketable because of blemishes will always be a factor to be contended with. The pomegranate, which is an ancient fruit little known to most people of the United States outside of the districts in which grown, has peculiar thirst-quenching properties which render it especially suitable for beverage purposes. The disposal of the blemished and off-sizes of this fruit which cannot be marketed as fresh fruit has already become a problem. The pomegranate juice has been described as the fruit juice which has the "beer tang" which is due to the slight astringency which comes from the juice of the peel.

## Fruit Beverage Industry Offers Outlet

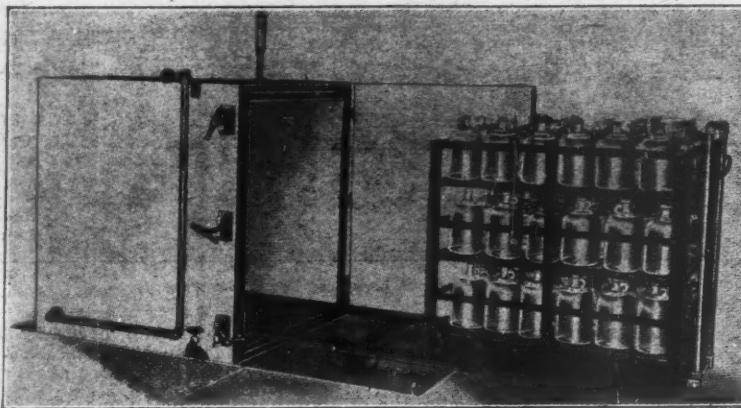
The various factors involved show the need for increased outlets for fruit. In the opinion of the writer, the fruit beverage industry offers an outlet which, properly developed, will not only relieve the present situation but will take care of a considerable increase in production of fruit. The use of large quantities of fruit for the manufacture of fruit beverages will tend to increase the demand for fruits in all forms. This will result in better prices to growers. The development of the fruit beverage industry will also benefit consumers because it will supply them with real fruit juices in place of the large quantities of imitation products now consumed.

It is encouraging to note that keen interest is developing in this subject by those engaged in the beverage industry. The writer attended the Sixth Annual Convention of American Bot-

tlers of Carbonated Beverages held at Louisville, Ky., November 10-14, and gave an address on "The Use of Fruit Juices in Bottled Carbonated Beverages." This was the first time this subject was ever presented before that organization. It was well received and the interest taken in it has been shown by the many inquiries received for further information.

The secretaries of two state bottlers' associations, one in the East and the other in the Middle West, signi-

fiers of the public can be readily developed. In the experimental work being conducted in the California Fruit Products Laboratory, a small capacity bottling equipment was installed. Beverages were made and tested by laboratory staff members, students and others. When they reached such a stage of development that we felt we had a satisfactory commercial product, the beverages were put on sale at a local grocery store. Demonstrations were held and the bev-



Pasteurizer for bottled beverages

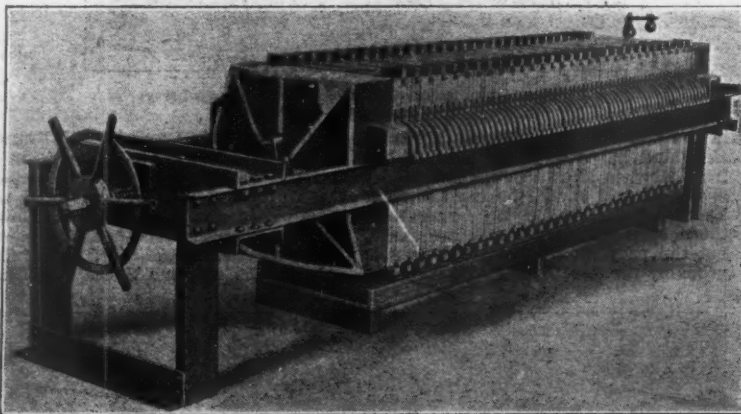
fied their intention to present this proposition to their associations at their meetings this year. They asked for a source of supply of a full line of fruit concentrates for this purpose, that is, concentrated juices of all of the fruits suitable for beverage purposes.

## A Problem of Practical Procedure

It is beginning to look as though we are approaching the time when it is a question as to how the fruit beverage industry can best be developed on a large commercial basis. That carbonated fruit beverages can be manufactured which will appeal to

erages were sold. A demand was created for these beverages which gradually increased beyond the capacity of our experimental plant. To meet this demand, arrangements were made with a reliable local bottler to bottle and distribute beverages for us. Syrups and concentrates were furnished by our laboratory, and the production was supervised by a representative of our staff to insure keeping the original quality.

Immediately following this arrangement, requests were received from bottlers from various parts of the state for the privilege of producing these beverages under the same con-



A filter press adapted for commercial work

the consuming public is beyond the experimental stage. The methods of their manufacture were described in the December issue of the AMERICAN FRUIT GROWER MAGAZINE and will not be repeated here. An almost unlimited supply of lemon and orange juice concentrates are already being manufactured in standardized form in California. Concentrates have also been made experimentally from the apple, blackberry, cherry, grape, loganberry and pomegranate, all of which are suitable for the production of bottled carbonated fruit juices.

## Demand for Fruit Beverages Can Be Developed

There is evidence that the demand for real fruit beverages on the part

of individuals or organizations with sufficient capital only to install equipment, with no provision for carrying on the business until there were returns from the products. Consequently they have failed. Unfortunately, also, such propositions are sometimes fostered by promoters and are not successful. The large number of fruit products companies which have failed convinces one of the necessity of making sure of one's ground before venturing on such a project. It is also necessary that this industry be established on a scientific basis. It is necessary to produce standard products which can be used by any bottler anywhere with specific directions which, if followed, will give uniform results. Many bottlers are not equipped to work out many of the problems involved in handling an unstandardized product.

The question of preservation is one which will have to be dealt with carefully. The treatment it is to receive subsequent to production will determine whether the high degree of concentration will preserve it or whether it is to be pasteurized or whether it requires a chemical preservative. In case it is shipped to the bottler and used within a few days, it might not require any treatment after concentration. If it is to be placed in an open container at the soda fountain and allowed to stand exposed to all sorts of contamination, or if it is to be shipped to a tropical climate, the use of a chemical preservative might be the only practical method. These points must be accurately controlled.

## Idle Equipment Could Be Used

The large number of idle breweries and wineries throughout the United States are admirably adaptable to fruit juice work. Much of the machinery already installed could be used. Such breweries and wineries could be converted into fruit juice concentrating plants, utilizing fruits as are grown within easy hauling distance of the plant. The wineries have fruit presses, filters and nearly all other equipment required for this work, while the breweries, with the addition of fruit presses, could be easily converted to this new use. Breweries have cold storage facilities which are almost indispensable in handling large quantities of fruit. When prohibition began, many breweries and wineries installed vacuum pans for use in concentrating fruit juices, so many such pans are available now.

Concentration in vacuum seems to be the most practical method at present. Machines have been constructed to do very efficient work along this line. An installation which has been recently called to the writer's attention concentrates apple juice six to one in from 18 to 28 seconds, at a temperature not to exceed 100 degrees Fahrenheit. This concentrate retained its original fresh fruit flavor very well. When diluted back to about the same strength as the original apple juice by the addition of carbonated water under pressure, it made a perfect carbonated apple beverage.

All other fruit juices concentrated in this manner would be perfectly satisfactory for use in making bottled carbonated fruit beverages. In this concentrated form, the juices could be transported to various centers and dispensed to the bottlers.

Complete equipment can now be purchased for the manufacture of bottled apple juice, and no doubt equipment for other deciduous fruit juices will be available sooner or later.

In the work of the California Fruit Products Laboratory, in connection with the manufacture of fruit beverages, it is our aim to become acquainted with those interested in fruit beverages, and it is our desire to assist them in producing fruit concentrates for the bottler in every way at our command. It is also our desire

(Concluded on page 28)

## Co-operation of Large Interests Now Essential

The indications are that the principal problem now remaining is to bridge the gap between the fruit grower and the bottler of beverages. It seems that the chief step necessary is to effect a combination or co-operation between large reliable interests for the production of fruit concentrates. This will necessarily have to be done by interests large enough, and with sufficient financial backing to enable them to do the necessary pioneering. Many of such propositions in the past have been handled



# Apple Measles

by Arthur S. Rhoads

Missouri State Fruit Experiment Station

**A**PPLE measles, a disease which has also been termed pimple canker, rough or scurfy-bark canker and pimple cancer, is a bark disease of apple trees which appears to be becoming more widespread and prevalent. This disease was first described by Hewitt and Truax from Arkansas in 1912, where it was first observed in 1908. It was next reported from Missouri in 1914 by Rose, who states that it has been known at the Missouri State Fruit Experiment Station since about 1904. Since these reports, apple measles has been reported from Michigan, Ohio, Pennsylvania, Maryland, Virginia, West Virginia, South Carolina, Alabama, Illinois, Kansas, Colorado, Texas and New Mexico. Except for the latter state, apple measles appears to be of comparatively little economic importance in those parts of the country from which it has been reported.

## Description of the Disease

Apple measles is extremely variable in its appearance and mode of occurrence. There are three more or less distinct types of the disease, although there may be gradations between them.

In the isolated pustular type, more or less numerous reddish to chestnut-brown pustules may occur on the smooth bark of the twigs and young branches, varying from sparse to dense infestations, as illustrated in Figure 1. These pustules closely resemble fruiting bodies, but microscopic examination shows the resemblance to be merely superficial. As a rule, these pustules average about one-thirty-second of an inch in diameter and about half of their diameter in height, but occasionally may be much larger. If a thin shaving is cut from the surface of the measles bark with a sharp knife, the cut surface is spotted with dark spots according to the number of pustules cut through. As a rule, the pustules do not extend inward more than a third of the distance to the cambium, and in no case have they been noted to extend more than half way into the cambium.

In the aggregate pustular or scurfy type, which is much more prevalent than the isolated pustular type, the pustules become densely crowded until areas of the twigs and young branches have a densely pimply or scurfy appearance and the whole area of the affected bark becomes irregularly thickened and acquires a much darker coloration than the normal bark, becoming reddish-brown to blackish and often with a purplish tinge (Figure 2). In this type of measles, the general appearance of the diseased bark is much like that of a skin eruption.

In the third type of the disease,

which is the measles canker formation, there occur on the smooth bark of the limbs and trunks of affected trees more or less localized and sharply defined areas of densely pustular bark of the aggregate pustular or scurfy type that soon become roughened or scaly. These cankers usually occur on the branches but sometimes occur at various points on the trunk from the base to the crotch of the scaffold limbs. As a rule, these canker formations consist of long, scaly bark areas from a few inches to a foot, or sometimes three feet, in length and usually extending entirely around the branches. In many varieties, the measles canker formation is the only evidence of the disease that the trees exhibit.

## Comparative Susceptibility and Resistance of Apple Varieties to Measles

Of a total of 347 known varieties and tentatively named seedlings of apple trees in the orchards of the Missouri State Fruit Experiment Station, including the replants as well as the older trees, 177, or 51 per cent, exhibited measles to a greater or less degree, but mostly of the canker type. Of the 2656 trees comprising the known varieties exhibiting measles, 763, or 28 per cent, were affected.

While the paucity of trees of most of the numerous varieties rendered it difficult to draw conclusions, it was clearly evident that there are marked differences in the susceptibility and resistance of different varieties of apple trees to measles under the same conditions of soil and management. Tree age does not appear to be a determining factor in the occurrence of measles, for in many of the varieties both young and old trees exhibited the trouble, and many of the latter clearly have been affected for several years.

It was furthermore evident that many of the susceptible varieties became affected by measles in a manner and extent more or less peculiar to the variety, although some varieties may exhibit all three types of measles. Only a comparatively few varieties appear to be markedly susceptible to measles. Among these may be mentioned the Beach, Blue-Pearmain, King David, Oldenburg, Red Astrachan, Summer Champion, Texas Red,

Winter Pearmain, and certain other unknown varieties for the pustular or scurfy types of the disease, and Heiges, Logan, Munson and Whitney (crab) for the canker type. The majority of the susceptible varieties merely exhibited measles canker formations. In the less susceptible varieties, these averaged from one to five per tree, while in the four most susceptible varieties just noted the trees commonly exhibited 10, and occasionally as many as 20, cankers on the limbs.

Some varieties exhibit a number of different types of measles. For example, some York Imperial and Jonathan trees may show only occasional isolated pustules, while others, or perhaps other branches of the same trees, may show patches of them or scurfy areas of bark, and some canker formations also. While young York Imperial trees appear very susceptible to measles, the older ones exhibit this trouble much less frequently. Of other well-known varieties, Jonathan appears to be much less susceptible than the York Imperial, and Ingram still less so, while Ben Davis appears to be only slightly susceptible. Among the varieties that appear quite resistant may be mentioned Gold, Grimes, Oliver and the true crab apples in general.

## The Cause of Apple Measles

While a number of widely differing opinions have been advanced to explain the cause of apple measles, no satisfactory and convincing explanation has yet been made and substantiated. Some think bacteria are responsible for this trouble; others suggest unfavorable soil conditions, while still others advance the theory of physiological disturbance. However, there is but scanty evidence supporting any of these theories.

Hewitt and Truax, whose attempts to isolate a fungous or bacterial organism resulted negatively, were of the opinion that apple measles is a physiological trouble. Rose, who worked chiefly with the scurfy or rough-bark type of measles, presented evidence that it is caused by one or more forms of bacteria which appear to be the same as the one causing a blister-spot on the fruit of certain varieties of apples. Adams, in Pennsylvania, regarded the trouble as a manifestation of poor drainage condi-

tions. Leonian, in New Mexico, attributed apple measles to an excess of nitrates in the soil. Recent experiments in New Mexico to isolate an organism that might be responsible for apple measles have given negative results. The writer also has failed to isolate a causal organism from measles apple bark.

As yet it has not been demonstrated definitely whether or not apple measles is a transmissible disease. Recent work in New Mexico, including various types of inoculations into healthy trees and various types of grafting, have all failed to show characteristic behavior of parasitic organisms; in fact, considerable difficulty was encountered when trying to use measles wood as stocks, as this wood seems to have but little vitality. In Missouri the writer has noted a single case where a scion cut from a densely measles branch was used in making a grafted tree and, late in the following summer, the new growth was found to exhibit the disease. However, this single case of the new growth being affected does not necessarily prove that the disease is transmissible, for it may have arisen on the new growth from the same cause that induced its development on the trees from which the scions were taken. The question of the transmissibility of apple measles is a problem that should be solved because the question of the advisability of using scions showing evidence of measles frequently arises.

The investigations of the writer do not indicate that, in Missouri at least, apple measles is caused by an excessive amount of nitrates in the soil, nor by excessively wet or poorly drained soils. This disease occurs in all the apple orchards of the Missouri State Fruit Experiment Station, including both young and old, and also more or less frequently throughout the apple orchards of the state. It occurs on the well-drained sites as well as on the poorly drained ones, and in both orchards maintained in sod and in clean cultivation. No relation has been observed between the prevalence of apple measles and the drainage of the soil, the application of fertilizers, tillage and cover crops, or the method of pruning. The disease known as apple measles has not been reported on any other tree and apparently is peculiar to the apple.

While apple measles clearly is a reaction of the bark to internal disturbances of the equilibrium, it still remains to be demonstrated whether this trouble is caused by some fungous or bacterial organism, or by some purely physiological derangement of the normal processes of

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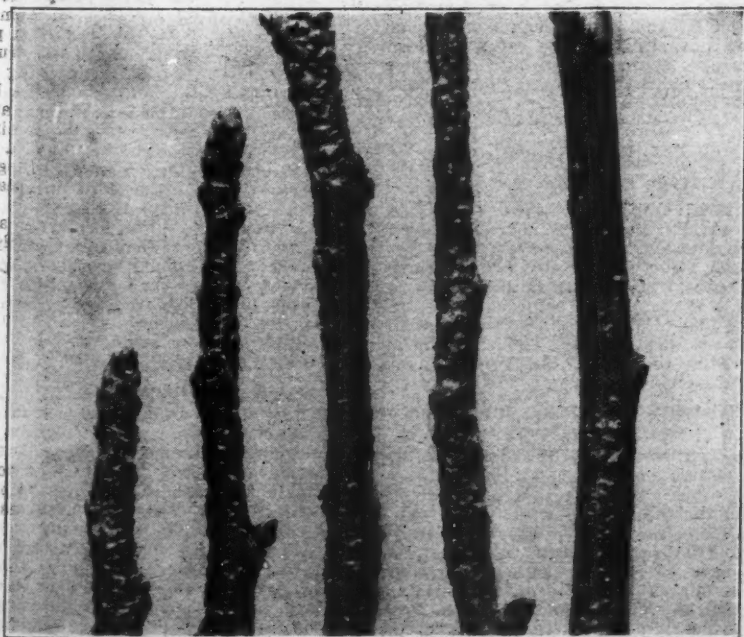


Figure 1—Pustular type of measles on twigs of York Imperial apple tree set in 1910, showing unusually large pustules varying in occurrence from sparse to dense. Twice natural size

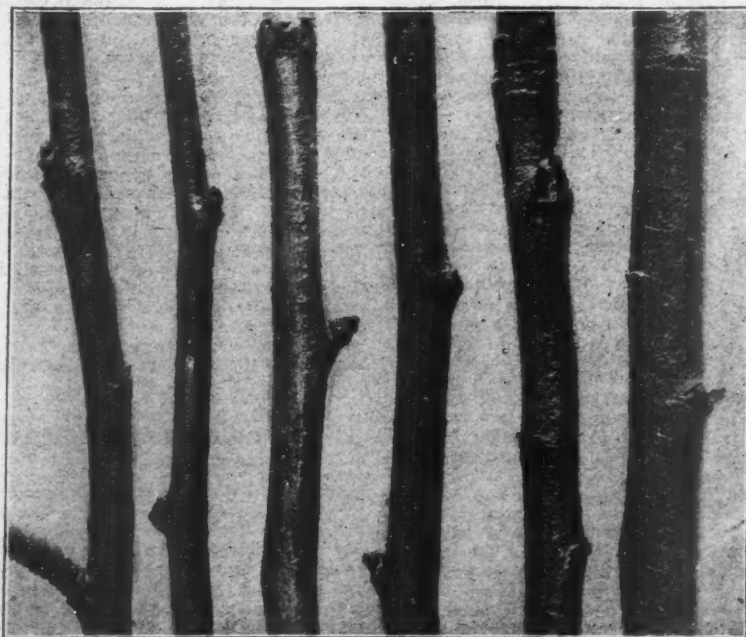


Figure 2—Measled twigs of Beach apple trees, showing the finely pustular condition of the bark characteristic of this and certain other varieties when affected by this disease. Natural size



## The McIntosh Family

by J. D. Luckett

New York Agricultural College

**F**AMOUS families of Jerseys, Holsteins, Guernseys, etc., are now so well known that almost every dairy farmer can quote the good points of his favorite. Although it may seem a little odd, the fruit grower is rapidly approaching the time when he can recite the merits of equally famous families of apples, and first among these by sheer weight of superiority will be the McIntosh family.

The McIntosh is distinctly the apple of the Great Lakes region, New England and Canada, and it already enjoys a popularity with the city trade unequalled by that of any other eastern apple. Once acquaint the city man with the high degree of excellence of McIntosh and he will be a confirmed McIntosh buyer. Now we have not only the McIntosh but several offspring of this great parent variety, which together form a most interesting and promising family.

### Origin of the McIntosh

It is always interesting to know something of the beginning of an ancient and honorable family, whether it be a family of human beings, of dairy cattle, or of apples. Fortunately, the origin of the McIntosh is well known. It originated as a chance seedling on the McIntosh homestead in Matilda township, Dundas county, Ontario Province, Canada, about 1870. The seedling was propagated by Allan McIntosh in his own nursery, and has later been widely disseminated and propagated by nurserymen.

But the McIntosh connections go back still further than this Canadian homestead; in fact, the point of origin of the McIntosh type of apple is lost in the obscurity of early horticultural history. It is certain, however, that McIntosh is one of several notable seedlings of the "Fameuse Family." Horticulturists disagree as to the exact origin of Fameuse, some contending that it is of Canadian descent, while others hold that it was introduced into this country from France in the very early years of American settlement in Canada. It is sufficient for our purpose to know that Fameuse was growing in Canadian orchards and gardens in the early 1600's, and it is even more important that it has always been noted for its marked tendency to reproduce itself from seed. In fact, in sections of Canada where nurseries were scarce, this method of propagation was taken advantage of until quite recent years.

Fameuse has transmitted to McIntosh this rare ability to reproduce its good qualities through its seed. It has been noted repeatedly, too, that McIntosh transmits its good points to a marked degree to its offspring when it is crossed with other varieties. It is in this way that McIntosh is building up a remarkable family stock.

### Promising New Stocks from the McIntosh

Horticulturists interested in the development of the apple industry in the northeastern United States and Canada have for some time attempted to breed new kinds of McIntosh in order to prolong the season for this type of apple. It is now predicted on good authority that within a few years stocks should be available from the nurserymen of the country which will supply the market with this delicious apple from August to May. In fact, a McIntosh for every day in the year may be a reality within the next decade.

The new sorts now being propagated for more extensive distribution include Melba and Early McIntosh, which ripen in August at the very beginning of the apple season; Milton, the most beautiful specimen of the whole family, which ripens a month later; McIntosh itself, ready about the first of November; Lobo and Sweet McIntosh, which accompany McIntosh in season or slightly precede it; Cortland, which follows a month later;

and Macoun, which is not at its best until February and which keeps in storage until April.

Of the new seedlings resulting from crosses between McIntosh and other standard varieties, all except Melba and Lobo originated at the Geneva (N. Y.) Experiment Station. These two were the results of crosses made at the Ottawa Experimental Farm.

### McIntosh Family Has Distinctive Characteristics

In flavor, aroma, color of skin and flesh, form, uses, seasons, in fact, in all qualities which go to make up a good apple, the fruit of the McIntosh family has a distinction all its own. The tree characters are just as noteworthy as those of the fruit.

Of first importance, the trees of all McIntosh-like apples appear to be most hardy and cold resistant, equalled in this respect only by the rather worthless Russian type of apples. This means that McIntosh will most likely be found dependable in cold climates and accounts in part for the popularity of the variety in New England and Canada. In regions where most of the old standard varieties suffered excessively from the extremely cold winter of 1917-18, McIntosh came through with little or no injury.

While the trees do not make especially good growth in the nursery, they are among the best growers in the orchard, surpassing most other varieties in the characters that the fruit grower desires. Thus, they are large, well-shaped, easily managed as to pruning, very productive, and they come into bearing early and bear regularly. Also, the trees do not break readily under stress of snow, sleet, wind, or heavy crops.

But the McIntosh family is not perfect, the parent variety and its offspring having certain faults individually and in common which the grower should anticipate. For one thing, all McIntosh-like apples are especially susceptible to scab unless the trees are kept well sprayed. Also, in most members of the family, the fruit does not hang to the trees as well as it might, resulting in undue loss by heavy winds during the ripening season. Uneven ripening also makes it necessary to pick the crop at successive intervals.

### Cortland Has Particular Merit

Cortland is a notable exception to this last fault. The apples of this variety hang to the tree through wind and rain to the very end of the season, a characteristic gained from the other parent of the cross, the Ben Davis.

The fruit of McIntosh has one serious fault, and that is that it bruises badly in picking, packing, and shipping. Here again, however, Cortland is a notable exception, the fruit of this variety standing up as well as could be wished. The tendency for McIntoshes to bruise badly in shipping is not an unmixed blessing, for it means that these apples cannot be grown in the West for the eastern market. The fruits of all the "Mac's" keep well in common and cold storage.

Thus do we hail McIntosh as a member of the aristocracy of the fruit world!

### Handling Pears Like Eggs

by G. M. Fuhr

**A**S AN easterner, I find the methods used by fruit growers along the Pacific Coast extremely painstaking and efficient. During the present period of depression, the only orchardist that is keeping his balance on the right side of the ledger is he who practices this same care and efficiency. The eastern orchardist can well learn from the western fruit grower as regards marketing.

Among the paying pear orchards in

the Rogue Valley is the Bear Creek Orchards near Medford, Ore. In addition to being a paying concern, it is also the largest of its kind in the valley. Accordingly, the methods used there are not made possible because of limited production, but the operators have proven contrary to the general belief that care can be practiced in handling a big crop.

Only one variety, the Bosc, is handled with anything like the degree of roughness found in the average pear orchard. The Bosc can stand more rough handling than most varieties. Pails with canvas bottoms are used for all varieties, the packers using extreme care in dumping fruit into lug boxes. The pears must be laid on their sides in both the pail and lug to prevent stem punctures or bruises.

Comice pears are perhaps the hardest to handle of any pear variety in the valley. Their skin is so tender that the slightest pressure of stem or finger nail will break the skin. The lugs are lined with corrugated paper, with the smooth side next to the pears. Even the pail must be cleaned of dirt often to avoid punctures from gritty substances that may get into it. The pickers are not allowed to dump pails of this variety but must place each individual pear in the lug box.

D'Anjou pears are handled the same as Comice.

In picking, the pear stem must be snapped off at the abscission layer (layer of cells at the point where a fruit stem normally separates). The ease with which this is done depends on the variety. The D'Anjou is the easiest to remove. The Bosc comes off readily, but its peculiar long shape often causes it to slip out of one's hands in fast picking. The Comice has a bad tendency to break off between the abscission layer and the fruit. In all cases, to be sure of proper removal, the thumb or forefinger must be placed at the point of separation.

But why all this care in harvesting? These pears are grown for fancy trade in eastern cities, and the prices realized are made possible only by putting the pears on the market in first-class condition. The eastern wholesaler or retailer will naturally favor a pear that he can hold for a time without loss. Not only that, but he also demands a product that will sell readily to the consumers of desert pears. A broken stem or broken skin will make a cull of the pear. Then why should not the orchardist take care to reduce such defects to the minimum?

Perhaps such exceptional care may not be necessary in all cases. It has, however, much direct application elsewhere, and especially in large orchards east of the Mississippi. Too many growers produce a good product and let the profits leak out through poor marketing. The careless picker is the cause of one of the largest leaks in putting the fruit on the market.

### Apple Measles

(Continued from page 11.)

growth and possibly also of nutrition. That this trouble is not caused by a fungus appears to be reasonably certain. The possible role of bacteria as a causal agent appears to be in doubt, the work of Rose being contradictory to that of all others who have investigated this disease. The writer is inclined to regard the trouble as a physiological one.

### Relation of Measles to the Health of the Tree

The statements in regard to the relation of measles to the health of the tree are also rather contradictory in the different localities from which the disease has been reported. Hewitt and Truax state that, while but few cases had been found where it could be stated with reasonable certainty that the disease had killed the tree, in nearly all cases the vitality of the tree had been noticeably impaired, and in many cases limbs had died apparently as the result of this trouble alone.

Rose, who studied this disease at the Missouri State Fruit Experiment Station some years ago, states that the disease does seem, in time, to kill out susceptible varieties. Writing in 1904, he states that all of the White Winter Pearmain trees in the Station orchard were killed about 10 years ago under conditions which indicated measles as the only cause of their death. He further states that at present all trees of the Beach variety are affected and that, while they do not seem to be particularly unhealthy so far as fruit and foliage are concerned, others of this variety have died after several years of attack by this disease.

In New Mexico it is stated that trees affected by measles remain dwarfed and that the fruit which they bear is small in size and inferior in quality. It is also stated that affected trees may linger for years until they die, but that when once seriously affected they cease to have any commercial value. In a still later account of apple measles in New Mexico, it is stated that, while there is yet no absolute proof that measles actually kills trees, it is certain that the disease does weaken them so that other pests can attack and kill them.

The writer's observations, which were based upon a large number of affected trees and varieties, do not indicate that, in Missouri at least, measles is responsible for more or less of a rapid decline of the tree as a rule. There does not appear to be any indication of either the dying or decline of any of the 19 Beach or the two Winter Pearmain trees remaining in the station orchards, although these trees have long been severely affected and a serious loss of them about 1904 was attributed to measles by Rose. Trees of many other varieties, such as the Blue Pearmain, King David, Oldenburg, Red Astrachan and Summer Champion, also have exhibited a heavily measled appearance for several years, the bark of practically all the branches and twigs being more or less densely pustular, and yet these trees show no indication of dying, dwarfing, unproductiveness or even of diminished vigor. In the great majority of the varieties recorded as being affected by measles, especially in the majority of those listed as having from one to several canker formations, it is clearly evident that the disease is of practically no consequence insofar as the health of the tree is concerned and that the affected trees ultimately outgrow the trouble in many cases.

It is not denied, however, that especially susceptible varieties of trees may not be killed by measles, but of the many measled trees observed by the writer but few cases were observed where any dying of the tree or part of the tree was believed to be due to measles, and in some instances attacks by weak parasitic fungi appeared to be a factor in their decline.

On the other hand, many young and vigorously growing trees appear to be able to overcome the trouble, for several Ingram, Mother and York Imperial trees set in 1918 were heavily measled on the trunk at an early age and yet appear to have largely outgrown the trouble without any special treatment. It is believed that any method of orchard management that will promote a good, vigorous growth of the trees will prove valuable in controlling apple measles.

**T**HE LOWER Rio Grande Valley, Texas, has now 22,000 acres planted in citrus fruits, and the planting this season is expected to increase the total to 30,000 acres. The history of shipments from the valley dates back only three years. In 1921, three cars were shipped, mostly to Houston and San Antonio. In 1922, the crop from 107 acres was shipped out of the valley. Last year a total of 251 cars was shipped, and it is estimated that 500 cars of grapefruit, oranges and lemons will be shipped this year. It is now prophesied that by the season of 1929 valley orchards will be producing around 25,000 carloads of fruit.



## We asked 420 Growers in 32 States . . .

to give us their experience with  
Sherwin-Williams Dry Lime-Sulfur.  
Here is the result:

	Excellent	Good or Satisfactory	Poor or Unsatisfactory		Excellent	Good or Satisfactory	Poor or Unsatisfactory
San Jose Scale.....	11.4	85.6	3.0	Apple Powdery Mildew..	3.6	92.8	3.6
Oyster Shell Scale.....	7.7	91.2	1.1	Peach Blight.....	9.5	90.5	None
Blister Mite.....	15.3	79.7	5.0	Peach Leaf Curl.....	7.4	92.6	None
Red Spider.....	15.4	84.6	None	Black Scale and Citricola	27.7	72.3	None
Apple Scab.....	10.0	89.5	.5	Citrus Thrips.....	26.6	73.4	None
Pear Scab.....	6.9	93.1	None	Twig Borer.....	12.5	87.5	None
Apple Blotch.....	7.4	88.9	3.7				

The total amount of Dry Lime-Sulfur used by these growers over the average of 3.6 years was 2,059,128 pounds, which is sufficient material to spray 2,000,000 full bearing apple trees at dormant strength or 8,000,000 at summer strength.

## We asked 299 Insecticide Dealers in 32 States . . .

to give us their customers' experience.  
Here is the result:

	Excellent	Good or Satisfactory	Poor or Unsatisfactory		Excellent	Good or Satisfactory	Poor or Unsatisfactory
San Jose Scale.....	4.5	93.9	1.6	Apple Powdery Mildew..	3.3	96.7	None
Oyster Shell Scale.....	7.6	92.4	None	Peach Blight.....	None	100.0	None
Blister Mite.....	2.4	95.2	2.4	Peach Leaf Curl.....	5.8	92.5	1.7
Red Spider.....	None	100.0	None	Citricola Scale.....	14.3	71.4	14.3
Apple Scab.....	3.3	96.7	None	Citrus Thrips.....	None	88.9	11.1
Apple Blotch.....	2.2	95.6	2.2				

The material represented by these questionnaires would spray 8,400,000 full bearing apple trees at dormant strength and 33,600,000 at summer strength.



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There is a Sherwin-Williams spray for every orchard pest and disease.

DRY LIME-SULFUR      PARIS GREEN  
ARSENATE OF LEAD      LONDON PURPLE  
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### Important about LONDON PURPLE

This remarkable product, Hemingway's London Purple, has the quickest killing properties, and due to its extreme fineness, insures maximum spreading, covering and adhesion. Unique for dusting purposes, also, because of its extraordinary fineness. Strongly recommended for such pests as Potato Bugs, Cotton Worms and Tobacco Worms. Can be obtained only from dealers in Sherwin-Williams insecticides.



Kill  
Rosy Aphids

# Safeguard Next Year's Crop with one spray

You can protect your trees and fruit from injury later on with one thorough spray before the foliage appears—and for less money by using Sunoco Spray Oil.

Sunoco Spray Oil emulsifies perfectly with ordinary water; no heating necessary; just a good, vigorous stirring. It stays mixed—will not separate; non-poisonous and non-irritating.

An emulsion of Sunoco is cheaper than lime-sulphur and nicotine.

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SELF-EMULSIFYING  
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In addition to killing aphids and their eggs, you can kill Scale, Red Mite and Apple Red Bug with only one thorough application of Sunoco, as a late dormant spray. Don't wait until these pests have multiplied and foliage and fruit are injured. Control them before any foliage appears and insure a clean, profitable yield of fruit next year.

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Makers of famous Sunoco Motor Oils and Greases

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## Beating Devils Out of Fruit Trees

by J. T. Bregger

A TRAVELER returning from the Orient relates an interesting observation on the Chinese method of throwing fruit trees into bearing. When apple trees, for instance, are grown to sufficient size but do not come into fruit, they are believed to be possessed of the Evil Spirit and the necessity arises to beat out the devils from such trees with clubs. This is usually accomplished by pounding the trunks with various weapons, and the desired result invariably follows, i. e., a crop of fruit in the next year or two.

The successful results obtained are much more easily explained than might be supposed. Most fruit growers are already familiar with the method of ringing or girdling apple trees sometimes employed in this country to make them bear, and it is only a slight stretch of the imagination to see that clubbing the trunks of such trees would produce practically the same condition, viz., a partial girdling, and as a final result, the production of fruit buds for the following year. Thus it is that science and superstition may walk hand in hand and still be actually justified by the facts.

(Editor's Note: The above is presented simply for the sake of interest. We do not recommend such practice. The best procedure is to give the trees a balanced treatment from the time they are planted. Such heroic methods will not then be necessary.)

## Illinois Horticulturists Meet

THE sixty-ninth annual meeting of the Illinois State Horticultural Society, held in Urbana on December 16-19, inclusive, was one of the best meetings ever held by the society. The attendance was large, the interest was excellent, and the spirit was fine, all of which were the result of a well-balanced, well-arranged and well-executed program.

The officers' reports showed the society to be in excellent condition. Marked savings in cost of printing were made the past year as compared with costs in former years.

The program included such authorities as Dean H. W. Mumford of the College of Agriculture, University of Illinois; Dr. M. J. Dorsey of West Virginia; Dr. R. H. Roberts of Wisconsin; Dr. Alvah Peterson of New Jersey; Prof. Laurence Greene of Indiana; W. H. Stites of Kentucky; J. A. Barron of the Michigan Fruit Growers, Inc.; Mrs. C. E. Strong of Wisconsin; and many others, including Professors Ruth, Colby, Flint, Brock, Carver, Anderson, Vogele, Lloyd, and Sayre of the University of Illinois.

Among the subjects treated were various phases of pruning, Oriental fruit moth situation, marketing, nut growing, spraying, care of the orchard, storage scald of apples, principles of tree growth and various phases of vegetable growing.

F. M. Simpson of Flora explained the National Apple Week Association, following which a fund of \$600 was subscribed for the plan by individual members. A motion was unanimously passed disapproving the so-called child labor amendment in its present form. The resolutions included endorsement of uniform inspection and standardization laws of the United States Department of Agriculture and voluntary inspection; approval of the National Apple Week program; a request that parcel post rates be not increased; and a recommendation that separate estimates be made by the government for summer, fall and winter varieties of apples.

The banquet proved a thoroughly enjoyable affair. Prof. J. C. Blair performed admirably as toastmaster. Toasts were given by Prof. Laurence Greene, Dr. M. J. Dorsey, Dr. Alvah Peterson, W. H. Stites and J. B. Burrows.

The former officers, who rendered ex-

cellent service the past year, were re-elected, as follows: J. B. Burrows, Decatur, President; L. M. Smith, Ozark, vice-president; John Garnier, Newton, second vice-president; H. W. Day, Springfield, secretary; and J. W. Stanton, Richview, treasurer.

## Kentucky Horticultural Society Meeting

THE SIXTY-NINTH annual meeting of the Kentucky State Horticultural Society was held at Lexington, December 10-11. The program included excellent addresses by members of the society and the horticultural staff of the university. Prof. N. D. Peacock of Tennessee gave an interesting report on the possibilities of early apple production. The second day was devoted almost entirely to marketing, addresses being given by J. J. Castellini, president of the International Apple Shippers' Association; Robert Hurst, produce merchant of Lexington; and Prof. O. B. Jesness of the University of Kentucky.

Resolutions were passed endorsing the work of the American Pomological Society; uniform systems of grading and packing; careful selection of varieties by growers; improvement in government crop estimates; and opposition to any advance in parcel post rates.

Officers were elected as follows: President, H. Van Antwerp, Farmers; first vice-president, W. H. Stites, Henderson; second vice-president, W. W. Hillenmeyer, Lexington; third vice-president, F. O. Clark, Berea; and secretary, Ben E. Niles, Henderson.

## Missouri Teams Wins

THE STUDENT teams representing the Missouri College of Agriculture again won highest rank in both apple and potato judging contests at the Fifth Mid-West Horticultural Exposition held November 11-16 at Waterloo, Ia.

The apple judging team was trained by H. G. Swartwout, of the horticultural staff, who has now coached the three winning apple teams for Missouri. The members of this year's team were G. L. Davis, Birch Tree; E. N. McCubbin, Monett; and Josie Slaughter, Bethany. Davis was high man in the whole contest and won out with 914 points out of a possible 1000. McCubbin was second with 902 points, while Miss Slaughter was fourth with 874 points. Miss Slaughter is the first girl from Missouri to be a member of any horticultural judging teams. This team won the trophy cup for the third time, having won it two years in succession previously, which gives the Missouri College of Agriculture permanent possession of it.



Missouri apple judging team. Left to right: H. G. Swartwout, coach; Earl N. McCubbin; G. L. Davis; and Josie M. Slaughter.

A prosperous and contented agriculture is the only safe and sure foundation for a stable government and for an enduring social structure. As we build upon such a foundation, we build the most enduring, all-embracing and the only genuine national prosperity.—Senator Arthur Capper.



## Pruning the Citrus Tree

(Continued from page 7)

### Height to Which Trees Should Be Pruned

The lower branches should not be allowed to rest on the ground. The fruit borne on such limbs is generally of poor quality and is apt to be attacked by brown rot. On the other hand, the trees should not be pruned up too high, as considerable bearing area is thus lost. The height to which citrus trees are pruned from the ground varies considerably and depends largely upon the implements used in cultivation. If the branches are a foot from the ground, provided there are no horizontal branches starting from the trunk



This young Valencia orange tree was stunted as a result of pruning off all upright growth

below that height, it is possible by the use of shields on cultivating tools to work well up under the trees and at the same time to produce large amounts of fruit of good quality on the lower branches.

### Regularity of Pruning Treatment Essential

Regular annual pruning for the bearing tree should be the rule, rather than irregular pruning. Frequent and regular treatment tends to preserve the proper equilibrium between root system and parts above ground. Further, the amount of pruning required to keep the bearing tree in good condition is reduced to the minimum by regularity of treatment, with a consequent saving of expense.

### Practices to Avoid

There are certain practices in the pruning of citrus trees which should be avoided. Heading back or "stubbing" is to be strictly avoided under all conditions. There is rarely a case where this practice is justified, and such cases are almost invariably found in young trees in connection with the development of a desirable framework system.

The severe pruning of healthy bearing trees is to be condemned at all times. There is ample evidence available on this point which shows conclusively that severe pruning not only



A well-headed citrus tree one year from planting

reduces the yield but is decidedly repressive of vigor as well. This is due to the reduction of bearing surface and to the consequent carbohydrate starvation which is always correlated with marked reduction of leaf area. The effects of severe pruning are in direct proportion to the amount of growth removed and usually require from two to four seasons to overcome.

The leaving of stubs where branches are removed is not only an evidence of careless work but is conducive to the production of clusters of suckers sometimes called "sucker nests." Poorly made cuts are productive of vegetative shoots which must be removed at a later time if injurious results are to be avoided. Cuts should always be made close to the parent limb and if possible in a vertical plane so as to

facilitate healing over and to avoid the tendency to sucker growth.

Shearing off the outer parts of the trees or "hedge pruning" in order to secure symmetry is another practice which should be avoided. In reality, such treatment is a light form of heading back, and it invariably stimulates the production of upright vegetative shoots which crowd each other and later require either thinning out or removal. Shearing necessitates follow-up work in order to keep the trees in good condition.

### A Correction

IN THE December issue, in the article by W. S. Perrine on "Pruning the Peach Tree," the pictures used in Figures 4 and 7 were interchanged.

The appearance of the two trees is somewhat similar, and probably the discrepancy may not have been noticed by many readers. In the interests of strict accuracy, we call attention to the matter, and we ask readers to interchange the pictures used in Figures 4 and 7 in studying Mr. Perrine's article.

The third national conference of the National Council of Co-operative Marketing Associations will be held in Washington, D. C., January 5-8, inclusive.

In 1923 nearly 400,000 barrels, or about 65 per cent of the total production of 610,000 barrels of cranberries were marketed co-operatively.

## YOU KNOW IN ADVANCE

Dodge Brothers Motor Car owners know in advance what any service operation will cost.

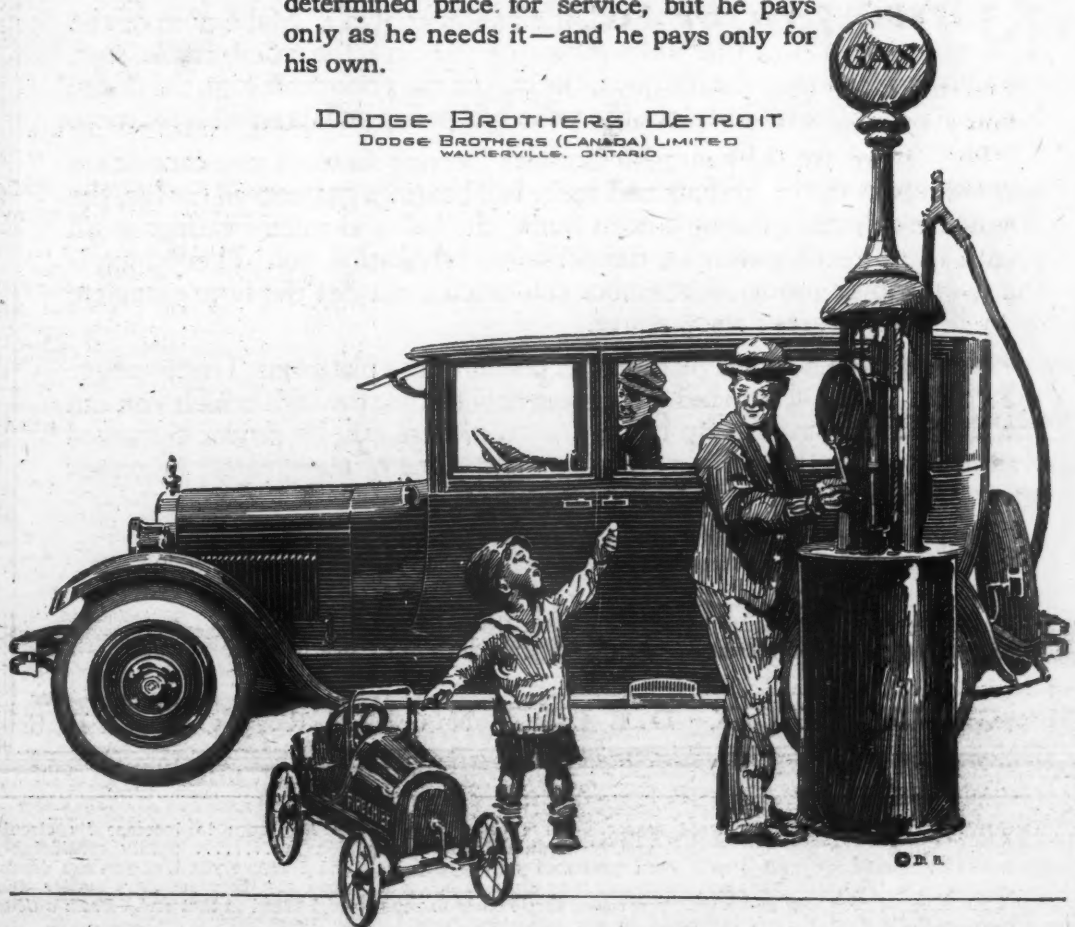
But they do not pay in advance for service they may never need.

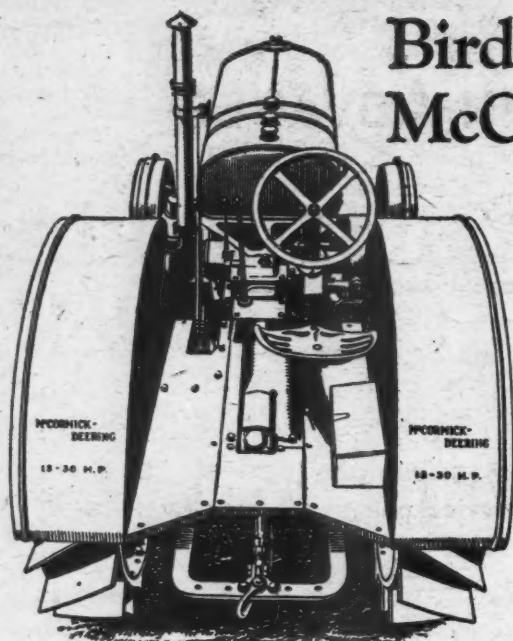
That is because Dodge Brothers do not believe in so-called "free" service, which simply means that the selling price of the car is so inflated that the extra profit is sufficient to cover "free" service costs.

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## Bird's-eye View of the McCormick-Deering Tractor

—Just about the view the operator has as he steps up on the platform and takes the seat. One day he may be sighting along the belt to the belt machine and the next day steering across his fields.

**N**OTICE the clear view ahead, the handy controls. Make note of the roomy platform, the wide protective fenders, the comfortable seat, the auto-type steering, the tool box, the brakes, the removable lugs, the drawbar with its range of adjustment, the wide belt pulley and its sensible location.

Then there are the many McCormick-Deering features you cannot see here—such as the crankshaft and main ball bearings guaranteed for life, the removable cylinders, the unit main frame, the ball and roller bearings at 28 points, the throttle governor, the perfected lubrication, etc. Everything is there, on top or inside. Remember this tractor reaches the farm complete with all the features named above.

Note the little round plate in the center of the platform. That is where the Power Take-Off attaches—the great new feature through which you can run the mechanism of grain binders, corn pickers, etc., by power conveyed from the tractor through a revolving shaft. One of the greatest of recent tractor improvements.

Write us for full illustrated catalog about the McCormick-Deering Tractor. Use your tractor for winter belt work and be well acquainted with it by spring's work.

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**MCCORMICK-DEERING TRACTORS**

**T**HE AMERICAN Refrigerator Transit Company, which is owned by the Wabash and Missouri-Pacific railroad companies, has recently announced the purchase of 2000 new refrigerator cars for early delivery. According to officials, it is the policy of these lines to add to their equipment in accordance with the growth of the perishable industry along their lines.

The new cars will have false floor racks hinged to the side walls to permit raising for cleaning. The body construction, including insulators, bumpers, etc., is to be in accordance with recommendations of the United States Department of Agriculture, which has recently been studying this question.

**S**EVERAL farm bureaus in the fruit section of southern Illinois, as well as the Adams County Farm Bureau in western Illinois, have recently requested the Illinois Agricultural Association to work for a revision of the game law which protects rabbits by a

closed season. These pests have increased greatly in number since they have been protected during the last few years, and they are now becoming a serious menace, particularly to young orchards, in the important fruit producing sections of the state.

**A**N ENGLISH newspaper recently carried a sober article on what was regarded as the serious condition of the soil in New Zealand. The sympathetic reader finds that this soil is not producing such good cricket grounds as formerly.

**I** WANT to congratulate you upon the quality of the AMERICAN FRUIT GROWER MAGAZINE. Men who have been in experiment station work and county agent work like myself can readily draw conclusions from experimental work, but to have it presented in a popular form is surely a great assistance to us. I trust that it will be possible for the AMERICAN FRUIT GROW-

ER MAGAZINE to increase its circulation in ..... county considerably, and I assure you that you can depend upon my help in any matter that might lead to that end.—From a County Agent.

**D**ATE growing is developing in the Salt River Valley of Arizona. The plantings of the past few years have brought the acreage to 65 to 80. Considering the slowness of propagation, this is a good start. It is reported that 50,000 acres in the vicinity are adapted to fig culture.

The report of the Secretary of Agriculture of the United States, 1924, is now off the press. Copies of the report may be obtained upon application to the Office of Publications, United States Department of Agriculture, Washington, D. C., so long as the supply lasts.

Subscribe to the AMERICAN FRUIT GROWER MAGAZINE; 3 years for \$1.00.

### Massachusetts Students Win

**O**NE OF the most interesting features of the American Pomological Society meeting at Atlantic City was the college students' fruit judging contests. The Massachusetts team, winner in New England, defeated several teams from the South and Middle Atlantic states and won the contest.

In planning the contest, different varieties of apples from different



Massachusetts fruit judging team. Right, standing—H. F. Bartlett; left, standing—A. W. Love; seated—Samuel Lunt

states and sections were mixed. There were 22 varieties of apples in all. Correct naming of the varieties counted for half the score. The mixture was a real puzzle. Even college professors hesitated to venture a name for some of the specimens. To make matters still more difficult, a number of the apples were affected with San Jose scale, codling moth, scab, cureulio and other enemies, all of which had to be named. It is doubtful if many judges at county fairs ever faced a more puzzling lot of fruit.

**T**HE Experiment Station Record recently contained a review by R. S. Valle on "Orchard Practices in the Citrus Industry of Southern California," following a five-year study, in about 1000 citrus groves.

Citrus groves near the Coast produce more fruit per acre than those of the interior. Groves on fine, sandy loam give the highest average yields. A definite relationship exists between the age of trees and their productivity. The yields vary steadily up to about 35 years of age. Nitrogen and manures appear to be the only fertilizers needed for citrus trees. The average yield was found to increase with applications of nitrogen up to about 350 pounds per acre, but the mottling of leaves apparently accompanies the use of excessive amounts. Winter-cropped groves give higher yields than clean cultivated groves receiving the same quantities of bulky organic fertilizers. No significant difference was found in the average yields of plowed and unplowed orchards. Less irrigation water is used in groves near the Coast, and the intervals between applications are greater than in the interior.

Cost studies indicate that citrus growing has reached a state of stability; there is a close relation between the growers' estimates of exchange values of groves, the capitalization of the present earning power of groves, and the cost of developing new groves on land purchased at its present value for other crops. Higher values prevail for coastal groves than for interior groves; net profits per acre are about the same in the two locations.

**F**RUIT and vegetable statistics, as compiled in the 1923 Yearbook of the United States Department of Agriculture, are reprinted in Yearbook Separate, No. 900. Copies of this publication may be obtained from the Office of Publications, United States Department of Agriculture, Washington, D. C.



## Pruning Apple Trees for Yield and Quality

(Continued from page 8)

been reached, do the trees make as much additional growth as they would have made had they not been pruned. Probably root pruning has the greatest dwarfing effect upon the tree. The root must supply moisture and soil fertility to the leaf bearing top, where they are combined with gases of the air and made into real plant food. The finished food is then returned to the roots to replace the depleted parts. The tree must at the same time supply the top with moisture and fertility for maintaining it. If the root pruning has been severe enough, and the spring and summer dry enough, the remaining roots may not be equal to this latter task, saying nothing of regrowing new roots.

Trees dug from the nursery row have had the severest kind of root pruning. To cut down the maintenance requirements of the top and relieve the draft upon this fragmentary root system, the top should receive a fairly liberal pruning. This will not only result in less loss of trees but usually in a better root and top growth the first year in the orchard. A good growth the first year is the best kind of insurance of good growth in succeeding years.

### Growth of Tree

The vigorous tree enters the dormant season with a balance between root and top. It is also better supplied with stored food at this time of year than at any other. If the balance between root and top is not disturbed by pruning or otherwise, this stored food and the efforts of the root and leaves of the tree will be used during the following spring and early summer for making a uniform growth throughout the tree. The roots, trunk, and branches will all increase in size during this growing period. If this balance is disturbed by either root or top pruning, the first energy of the tree and the first stored food to be used in the early spring will be used for replacing the cut-away top or root. The other part of the tree will stand practically still until this balance is regained, and then the tree as a whole will make a smaller growth than it would have made had its balance been undisturbed.

Devitalized trees, which have made no appreciable growth for a number of years, may be invigorated and forced into general growth by a top pruning, although the most permanent and surest way of invigorating devitalized trees is by improving the fertility of the soil rather than by pruning. All trees making good growth will be dwarfed in proportion to the amount of pruning received. Vigorous young trees heavily pruned may actually make larger individual shoot growths than similar trees lightly pruned. But the lightly pruned, vigorous tree usually makes more

total shoot growth and always makes more root and trunk growth than the heavily pruned one. It also completes its growth earlier in the season and stores up a larger food supply than the heavily pruned tree. This high storage of food makes the tree more resistant to winter injury.

### Early Bearing

Pruning not only has a dwarfing effect upon vigorous trees but retards bearing as well. The unpruned tree will reach bearing size, form fruit buds, and bear fruit before the pruned tree. The unpruned tree will have no balance between branches, will be very dense, and will be inclined to bear its crops near the ends of the branches or outer part of the tree. Just enough pruning to direct and control the growth of the tree will not materially retard bearing and will give much better distribution of bearing wood and balance between branches. A loosely built tree will form many more productive fruit spurs than a tree having the same amount of top but more compactly built. Thinning-out pruning retards early bearing only slightly, while heading-back pruning discourages it the most.

### Prolonging the Productive Life of Fruiting Wood

The first spurs often become devitalized and unproductive as trees become older. This is due not to the age of the spur so much as to its environment. A spur kept properly vigorous will continue to produce for a number of years. The two essentials for prolonging the productive life of fruit spurs and hangers are light and soil fertility.

The upper third of the tree should be by far the thinnest part of the tree. Light must percolate through it to the lower two-thirds of the tree. The next or central third of the tree should be somewhat denser but thin enough to allow entry of sufficient light to the lowest third of the tree. This last third, the lowest part of the tree, where fruit can be produced most economically, should be the densest part of the tree. The fruiting wood on this part of the tree is usually the least productive on account of heavy shade. The first step in prolonging the life of fruit spurs and hangers is to thin out the top of the tree and keep it thinned. Heavy shade is responsible for the short life of more spurs and hangers than any other one thing.

If the tree as a whole is devitalized, removing partly or entirely some of the spurs and hangers (spur pruning) may be necessary to reinvigorate the remaining ones. The natural spreading of a tree under its crops of fruit always results in an invigoration of the fruit spurs and hangers on the interior part of the tree. This is due to a better light supply and a restriction of sap flow through the bending branches. Keeping up the fertility

(Concluded on page 20)



Figure 2—A Spitzenburg tree which yielded over 13 boxes of fruit in 1923. It has received no pruning except thinning out since 1917. It is growing in the same community as the tree shown in Figure 1 and has received similar care, except as to pruning.



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General Motors Truck Company is as old as the truck industry. GMC engineers have studied hauling needs for all those years. No truck manufacturer is better organized to build a successful truck.

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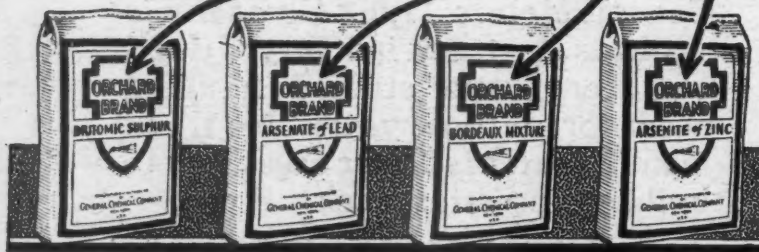
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The process is simplicity itself. Just put the materials into the hopper, start the engine, and in a minute or two they are thoroughly mixed.

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Feeder arm quickly changed for straight sulphur and other dusts not requiring mixing.



## Power Dusters

—that mix their own dust

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The dust issues from a Bean outfit in an all-enveloping cloud which reaches every part of the tree or plant, insuring complete coverage and highest effectiveness. This is the result of the perfect agitation, complete breaking up of the material, and positive regulated feed from the fan.

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## Orchard Problems and Their Solution



Edited by Paul C. Stark

### Value of Stable Manure as Orchard Fertilizer

How does the use of stable manure compare in value with nitrate of soda to use on apple trees? Can this manure be placed around the trees any time during the winter to good advantage?—A. F. R., Tennessee.

STABLE manure makes one of the best fertilizers for apple orchards it is possible to obtain. You are very fortunate if you have this valuable fertilizer available and can spread it over your orchard during the winter months. If applied at this time, it will not only relieve you of work during the busy season, but will put the fertilizer where the early spring rains will carry it into the ground.

Ordinary barnyard manure, when well handled, is reasonably high in nitrogen and will accomplish everything in the way of growth that can be accomplished by nitrate of soda. It is not as quickly available as the nitrate, however, but in some respects this fact is advantageous.

Apple trees fertilized with stable manure show the usual dark green foliage of nitrogen-fed trees. In addition to nitrogen, this form of fertilizer adds humus to the ground and in many cases is valuable from the standpoint of serving as a mulch.

trees with a light crop. Its control is therefore based largely on maintaining the best system of orchard operation which it is possible to use in that particular orchard.

### Origin of Red Rome

What is the apple known as "Red Rome," and where did it originate? Is the variety superior to the ordinary Rome Beauty?—R. B. O., Ohio.

THE RED ROME apple is a "bud sport" of the Rome Beauty, differing from it only in the matter of color. In other words, instead of being a striped red apple like the Rome Beauty, it is a solid red apple. In all other respects it seems to be identical with the variety from which it arose.

At the present time there are several strains of Red Rome, each originating in a different location. What seems to be the best strain originated in Ohio, however, and within the last few years it has become very popular with the commercial fruit growers of that state and elsewhere. There is little question but that the variety is a valuable addition to the list of standard varieties of apples.

### Apple Varieties for the South

What are the best varieties of apples to plant in commercial orchards south of the Mason-Dixon line? I have found Delicious very good, but in planting a new orchard I want to choose about three or four of the best sorts.—J. A. K., Arkansas.

GENERALLY speaking, any of the good commercial apple varieties of the Middle West will do well in the South. These varieties include such well known sorts as Delicious, Grimes Golden, Stayman Winesap, King David, Winesap, and Jonathan.

### Pruning the Concord Grape

(Continued from page 5)

to find good wood growing from close to the trunk, but it seems more advisable to use the wood of good quality, even though it spoils the appearance of the vine at pruning time, rather than to sacrifice the yield of the vine to appearances.

Second, in case the fruiting cane arises from a point quite distant from the trunk, select another cane that grows from the base of the arm or from the trunk, and remove all but one or two buds. This spur will produce a shoot or shoots that will probably be of good enough quality to be used as fruiting wood the following year and permit the removal of most of the old arm. Spurs are not designed for fruiting, though they usually will produce some fruit; they should be used for renewal purposes alone. If the cane saved for fruiting grows from a point close to the trunk, renewal may be secured from one of its shoots and no spur need be left.

Third, decide upon the number of buds to be left on the vine. This number will vary from vine to vine in a vineyard, depending upon the kind and amount of growth made by the particular vine. It will vary from vineyard to vineyard even when the vines are of apparently the same vigor, depending upon the natural fertility of the soil and the type of culture given the vines. The more fertile the soil and the better the culture received, the more fruit the vine will be able to produce without reducing the following crop.

The yield and growth of the vine

### Control of Bitter Pit and Jonathan Spot

Will a spray applied for Phoma spot and bitter rot control the Jonathan spot?—W. S. W., West Virginia.

SPRAYING will control certain insects and fungous diseases, but will not control diseases which are caused by certain "conditions" rather than by specific pests. Jonathan spot is a disease of this type and therefore not remedied by spraying. Such troubles are often called "physiological diseases" because they are related to the nutrition of the tree and are usually associated with certain abnormal weather conditions, such as variations in the water supply during the season. Jonathan spot is usually found on



will serve as a means of information as to the success of the pruning the year before. If the yield was large for the vineyard and the vine growth small, the vine was not pruned severely enough. If the yield was small and the growth larger, then the vine was pruned too severely. The vine itself furnishes the grower very accurate criticism of the pruning he gave it. By close observation, he should be able to better his pruning from year to year.

Fourth, distribute the buds between the four canes left for fruiting. The stronger, more vigorous canes will take a larger number of buds than the smaller ones. Balancing the distribution of the buds will induce a more uniform type of growth on all of the canes so that the selection of fruiting wood will be easier the following winter.

Fifth, remove the excess buds from each fruiting cane.

Sixth, remove all other wood from the vine.

Pruning the vine involves the two functions of training the vine to the trellis and controlling the size of the crop. Wherever possible, the canes should be selected with both ideals in mind; but it is much more important to harvest a full crop regularly than to have a perfectly trained vine each year. Even when the training is not good, the use of a single spur will usually permit the vine to be brought back where it should be by the pruning of the following winter.

#### Prune According to Vigor of Vines

As has been mentioned, the number of the buds must be varied to meet the requirements of vines making a growth of varying vigor. The weaker vine is not able to produce a crop and make a good growth during the next season unless it is pruned more severely than the stronger vine. The effect of pruning a vine too lightly and thus permitting it to overbear, is shown in Figure 2. The better type of growth made where more moderate pruning was practiced is shown in Figure 3. The effect of the pruning given in the winter of 1924-1925 is felt as much in the summer of 1926 as in 1925. No one would expect the vine illustrated in Figure 2 to produce much fruit next year, and the reason for this condition is because it was pruned too little a year ago. Many growers are anxious to get the greatest possible yield from their vines each year, with the result that the vine growth is weakened and the crop is not very much greater in total weight than from vines pruned more moderately; but the crop is regularly characterized by small bunches.

#### Quarter-inch Canes Are Most Fruitful

The old recommendation to save fruiting canes about the size of a lead pencil has been proven correct by the data secured by the horticultural department of the Michigan Agricultural College. However, since pencils are of different diameters, it is well to use one of the correct size as a gauge. The quarter-inch canes have been shown to be more fruitful than canes smaller or larger. It is impossible, of course, to find four canes of this size on very many grapevines. In weak vineyards the matter of making a choice is simple; merely choose the largest cane available, for none will be too large. In more vigorous vineyards, it is often necessary to make a choice between a cane that is somewhat too large and one somewhat too small. The data mentioned show that the cane that is a little too vigorous, that is, a little larger than the quarter-inch size, is better than the cane a little too small.

One of the common terms vineyardists use is "bullwood." It is applied to the larger-sized canes growing in a vineyard, and the grower usually discards these canes at pruning time. As a matter of fact, in the weaker vineyards, these canes are the most fruitful that can be found. In the stronger-growing vineyards the "bullwood" is less fruitful than the quarter-inch cane, but it is better

fruiting wood than the weak, short-jointed canes which are often saved for fruiting, for these are the very poorest fruiting wood to be found on the vine.

#### Canes of Moderate Growth Are Best

Prof. Schrader, of Maryland, has presented data showing that there are differences in the fruiting capacity of quarter-inch canes. Those which have made a relatively short growth are less fruitful than those which have made a moderate growth, and those which have made a very long growth are also less fruitful than those which have made a more moderate growth. However, there seems little doubt that almost any quarter-inch cane is better than any cane three-sixteenths of an inch in diameter or smaller.

Any grapevine has the ability to produce a crop of about a certain amount. If the pruning given has permitted the vine to produce this quantity regularly, a change in the type of wood saved will not give any increase in yield except at the expense of the vine itself. Consequently if buds of a more fruitful type are to be utilized, a smaller number will carry the crop. The advantage to be gained is mainly through an increase in average size of bunch and the production of a better type of fruiting wood for the following season's pruning. Where the yield has been held down by fruiting an insufficient number of the less fruitful buds, an increase can be obtained by selecting a better type of wood.

Where an increase in total yield is desired in a vineyard, it is well to consider the possibility of increasing the growth and vigor of the vine by the use of fertilizers or better cultivation. This seems a much more profitable way of improving the yield of the weak vineyards than anything that can be done by pruning.

#### Renewing the Trunks

One of the points stressed by successful growers is the advantage obtained by getting rid of long arms of old wood. It seems just as important to renew the trunk itself occasionally. This practice may not be of immediate benefit in increasing yield, but it does benefit the vineyard. Many of the old trunks are so crooked that they prevent close cultivation with horse tools. Others are nearly dead, most of the trunk being infested with fungi of one sort or another. These trunks should be replaced by young healthy growths. A sucker may be retained and trained to the first wire the first winter. The year following it may be carried on to the upper wire and the lower arms established. As the new vine increases in strength, it should be permitted to bear a larger proportion of the crop and the old vine should be pruned more severely. At the end of the third or fourth year the old trunk should be removed and burned and the young vine may then carry the full crop. It is possible to renew the vine completely without any loss of fruit yield.

#### Resolution Passed by National Grange

WHEREAS, There has been proposed an amendment to the Constitution of the United States which if ratified will give Congress the power to limit, regulate, and prohibit the labor of all persons under 18 years of age; and

WHEREAS, This amendment as now drawn is so unrestrictive and sweeping that its application could become absolutely dangerous to the best interest of the communities of the nation, and to the welfare of the children themselves; therefore be it RESOLVED, That the National Grange pledges itself anew to the work of bettering child life in community, state, and nation; but on account of its sweeping nature and its tendency towards centralized bureaucratic control we are opposed to the ratification of the amendment as now offered.

## "Important news—pass it on"—they write

CUSTOMERS from all over the country write us suggesting that we make a little more noise about one of the strongest points of Arcadian Sulphate of Ammonia.

"Why not tell people," these letters ask, "that your Arcadian Sulphate of Ammonia is fine and dry—that it needs no pounding, grinding or screening? This means big savings in time and labor." In addition—

Arcadian is the most efficient top-dressing for all plants needing ammonia. It's *quick acting!* And *effective*—contains one-third more ammonia (one-third more active plant food) than any other nitrogenous top-dressing.

Yet economical. Fifty pounds of Arcadian contains more ammonia than two tons of barnyard manure.

### Do This!

Send the coupon with your name and address. Tell us in what crops you are particularly interested. By return mail we will send you, free of course, bulletins showing how to increase your crops by ARCADIAN Sulphate of Ammonia. These Bulletins will prove valuable to you. Write for them today!

The *Barrett* Company

Agricultural Department

Medina, Ohio

Atlanta, Georgia

Berkeley, Cal.

New York, N. Y.

The Barrett Company (address nearest office)

I am especially interested in \_\_\_\_\_

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and wish you to send me bulletins on these subjects.

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## Perfect Fruit with MYERS SPRAY PUMPS

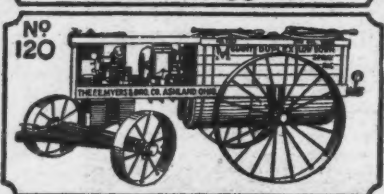
**WHY** do you spray? It is no longer a question with you as to the money you spend or the time you devote to this important job. It is the results that you are striving to accomplish which count. Larger yields of perfect fruit and vegetables through spraying is the goal of your efforts and whether you spray but a dozen trees or ten thousand trees, this one fixed purpose governs your spraying operations. Fruit profits depend on quality and fruit quality depends on spraying. Then why wait until it is time to spray to purchase a spray pump or spraying accessories? Write us today for a copy of our new Spray Pump Catalog, No. SP25, and see what Myers has done to help you do your spraying more efficiently—easier, quicker and at less cost.

You will find Myers Bucket and Barrel Spray Pumps as well as the smaller size of complete Outfits for hand operation are better made and better equipped than ever before, and will also discover that the new Myers Self-Oiling Power Spray Pumps and Complete Self-Oiling Power Spray Rigs with their positive self-lubrication, enclosed working parts, automatic regulation and other exclusive improvements will give you a new standard of power spraying the like of which is not equalled for safety, economy and high efficiency. And best of all you will find Myers Spray Pumps and Spraying Accessories are listed at **LOWER PRICES THIS YEAR.**

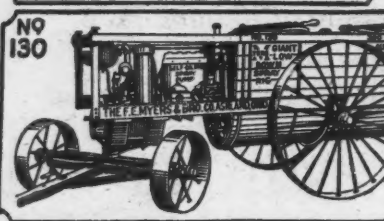
For real spraying satisfaction demand a MYERS SPRAY PUMP every time. Your dealer can supply you. Insist on his doing so. In the meantime, a copy of our 1925 catalog awaits your request for it. It's free. Write today.



No. 296



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**THE F.E. MYERS & BRO. CO.**  
ASHLAND, OHIO, 150 ORANGE ST.  
ASHLAND PUMP AND HAY TOOL WORKS

with discs having a three-sixteenths-inch aperture, into another 50-gallon barrel. If desired, one rod can be shut off so that all the material passes through only one rod.

This material should pass through the pumps under pressure at least three times. Lubricating oil emulsion made from this formula will not hold up long and should be made up daily as required.

### Pruning Apple Trees for Yield and Quality

(Continued from page 17)

of the soil is always necessary for prolonging the life of these spurs and hangers. Building a tree loosely and keeping it vigorous and properly thinned out are of first importance in keeping the fruiting wood active.

#### Size and Color of Fruit

Pruning properly done will not materially affect the size of fruit, unless soil moisture and fertility are the limiting factors. Of course, the real remedy here will be a building up of the soil fertility and its water-holding capacity. While doing this, or where this is out of the question, the upright branches should be thinned out and the fruiting wood and drooping branches thinned out and headed-back to fit this shortage.

The set of fruit and vigor of the trees are the two things determining the size of fruit. A very heavy set of fruit and a lack of vigor in the tree always mean small fruit. Pruning should be used as a supplement to soil building and fruit thinning to correct this fault, but pruning alone should not be expected to correct it. Pruning for vigor, unless the tree has been standing in a devitalized condition for a number of seasons, is usual.



Figure 3—This picture shows the natural and extensive spread an old apple tree will make if given a chance

ly a waste of bearing wood and does not permanently invigorate. Thinning the fruit by pruning removes the leaves as well as the fruit and does not give the results that thinning the fruit itself does.

Pruning for a better diffusion of light to the fruit will materially increase the red color. The pruning may be severe enough to increase the growth and size of leaves sufficiently to shut out the light rather than let it in, which would materially cut down the red color. Trees of bearing age should be kept thin enough to allow diffusion of sufficient light for coloring the fruit.

### Farmers Have Many Radio Sets

IT IS estimated that there are now 370,000 radio sets in use on farms, as compared with 145,000 in use a year ago. The United States Department of Agriculture recently received reports from 833 county agents. These reports place the number of radio sets in their counties at 108,710, or an average of about 130 per county.

Hotel Clerk—"Why, how did you get here?"

Hard Egg—"I just blew in from Montana with a bunch of cattle."

Hotel Clerk—"Well, where are the rest of them?"

Hard Egg—"Down at the stockade. I ain't as particular as they are."

## Protects ORCHARDS VINEYARDS SHADE TREES Against Climbing Insect Pests



**CLIMBING** insects cannot cross a band of Tree Tanglefoot—a sticky material applied in narrow bands to the trunks of trees and grapevines. It is especially recommended against Climbing Cutworms, Canker Worms, Gypsy, Brown-tail and Tussock Caterpillars and Ants.

#### Outlasts all Substitutes

One pound makes 12 lineal feet of band three-inches wide. It remains effective three to four months, *outlasting all substitute materials from 10 to 20 times.*

Tree Tanglefoot is quickly and easily applied with a wooden paddle. For tree surgery nothing equals this material. It waterproofs crotches, wounds and cavities when nothing else will. Leading horticulturists everywhere endorse it. Seed, hardware and drug stores sell it. Prices: 25-lb. pail \$11, 10-lb. can \$5.25, 5-lb. can \$2.75, 1-lb. can 60 cents.

An illustrated book on leaf-eating insects sent free on request

**THE TANGLEFOOT COMPANY**  
GRAND RAPIDS, MICHIGAN

# TREE TANGLEFOOT

### Making Casein-Lubricating Oil Emulsion on the Farm

(Editor's Note: In the December issue an article was printed on page 17 which presented the most recent recommendations of the United States Department of Agriculture on the "Control of San Jose Scale on Peach Trees." The following statement, recently received, is a supplement to that article:)

**IN MAKING** the cold pumped lubricating oil emulsion for use in controlling the San Jose scale on peach trees, as outlined in a circular issued from this Laboratory, growers are particularly cautioned to mix the calcium caseinate and water together first before adding the oil, as it is impossible to get a satisfactory cold pumped emulsion if the oil and calcium caseinate are mixed first. As a matter of fact, when the oil, water, and calcium caseinate are mixed together an emulsion results which will not mix with water when diluted, and if used may result in serious injury to peach trees on account of free oil. If the directions below are closely followed in preparing the cold pumped material, a safe, cheap, and effective emulsion will result.

Red engine oil or oil of similar grade .....	30 gals.
Water .....	15 gals.
Calcium caseinate .....	4 lbs.

The following equipment is necessary: Two 50-gallon barrels, one duplex or triplex pump, and one three or four horsepower engine (the ordinary power sprayer with suction attachment).

The four pounds of calcium caseinate is thoroughly and rapidly stirred in about two gallons of water. This mixture is then placed in a barrel and the additional 13 gallons of water added and stirred again. Then add the 30 gallons of red engine oil or oil of a similar grade and stir again. Place suction hose in the 50-gallon barrel and start motor. When the pressure registers 250 pounds, allow the ingredients to be sucked through the pumps and out through the spray rods, either with discs removed or



for January, 1925

## Treatment of Pruning Wounds

by Warren P. Tufts  
University of California

FORMERLY it was considered good practice to remove fairly large limbs during pruning. At the present time the removal of large branches is regarded unwise for the reason that such methods upset the balance of the trees and interfere with fruit production. If trees are properly pruned from the start, the removal of large limbs can, for the most part, be avoided. However, even under the best methods, it becomes necessary occasionally to remove a fairly large branch.

Careful investigations have shown that all wounds an inch and a half or more in diameter should be covered with some protective material in order to prevent the entrance of fungi while the wounds are healing over. Smaller wounds need not be covered, as a rule, for nearly all of the coverings delay healing over to a certain extent, and healing over usually occurs in the case of small wounds before damage results from rot.

All cuts should be made close to the branch from which the limb is removed, leaving no stub. This will greatly facilitate the healing of the wounds.

The treatment of pruning wounds depends largely upon local conditions. In any section, such as the Watsonville apple district of California, for instance, where the foggy climate favors the germination and growth of the fungi which cause wood decay, it is best to disinfect the pruning cuts as soon as the wood has dried a little, but before any cracks have formed. Cyanide of mercury, one part to 1000 parts of water by weight, is a good disinfectant. The solution should not be put into a metal container. Containers made of wood, glass, or enamelware should be used. Cyanide of mercury is a stomach poison and must be handled with care.

In localities where the air is relatively dry, it will ordinarily be unnecessary to disinfect pruning wounds, but in any case large pruning wounds should be covered with some protective substance.

The following are three of the best materials for covering wounds:

White lead paint mixed with raw linseed oil.

Asphaltum, Grade D, which must be heated before applying.

Oronite, which is similar to asphaltum, but which can be applied cold. When too thick, a special non-injurious "oronite thinner" can be added.

## A New and Distinctive Eastern Fruit Package

by H. B. Tukey

New York Agricultural Experiment Station

THE NUMEROUS apartment and small houses no longer afford opportunity for the storing of the customary winter supply of apples. To meet this problem the East is developing a small cardboard box, ranging in contents from a dozen to 50 apples, which promises much in the better distribution of eastern fruit.

For a long time the eastern fruit growing section of America—especially New York and New England—has been looking for a distinctive package to carry its fruit. The Pacific Coast has developed the box for apples, pears and other fruits to such an extent that the standard box has come to represent western grown fruit. On the other hand, the barrel has long been the package for eastern grown fruit.

But with a strong demand for the fancier grades of fruit packed in smaller containers has come the bushel basket, the hamper, and the Climax basket, and, in a small way, their adoption was successful. Unfortunately, however, these packages have long been known as carriers of poor grades of fruit, and the trade has discriminated against them.

At this point had there been expert box packers in the East as there are in the West, there is no question but that the East would have turned towards the standard box for apples. The nearest substitute for the standard box was a wooden box with cardboard partitions much like an egg crate, and this was tried.

It has been several years now since the introduction of the partitioned box, and in this time much thought has been put upon the subject. The outcome appears to be the development of a distinctive eastern pack. It consists in containers holding 12, 16, 20, 24, and on up to 50 apples, each in its separate compartment. The business man on his way home now has the opportunity of stopping at the fruit stand or the corner grocery store and tucking under his arm a box of perfect apples of a size to suit his inclination and his pocket-book. Chain stores are handling this type package; co-operative packing plants are packing their fruit in it. The East has seemingly found a new outlet for its fancy fruit.—*The Pomologist*.

## American Farm Bureau Convention

O. E. BRADFUTE of Ohio was re-elected president of the American Farm Bureau Federation at the annual meeting in Chicago, December 8-10. E. A. O'Neal of Alabama was made vice-president. The board of directors, by regions, will be as follows:

Mid-western region—Charles E. Hearst, Des Moines, Ia.; J. F. Reed, St. Paul, Minn.; S. H. Thompson, Quincy, Ill.; and M. L. Noon, Jackson, Mich.

Eastern region—G. M. Putnam, Concord, N. H.; Enos Lee, Yorktown Heights, N. Y.; and J. C. Brubaker, Lititz, Pa.

Southern region—E. P. Cahill, Hancock, Md.; W. T. Harris, Morganfield, Ky.; and Harry Williams, Dallas, Tex.

Western region—Frank Evans, Salt Lake City, Utah; A. C. Hardison, Santa Paula, Calif.; and W. A. Hardy, Fernley, Nevada.

Delegates from 35 states were in attendance. Farm leaders to the number of 750 were present from every state in the country.

Addresses were given by N. S. Hill of the United States Shipping Board; C. W. Hunt of the Federal Trade Commission; G. N. Peek of Moline, Ill.; and E. H. Cunningham of the Federal Reserve Board. Secretary of Agriculture Howard N. Gore could not be present because of illness.

On the second day six group meetings were held, in which each group discussed problems in detail in which those in attendance were vitally interested.

Several changes were made in the constitution, chief among which was one giving sections with a large membership an increased number of delegates, not to exceed two from a district. These provisions will help to pacify the Middle West states which have by far the largest membership but which heretofore have had the same representation as sections with a small membership.

## World Agricultural Census

A WORLD agricultural census is being planned for 1930 by the International Institute of Agriculture. The object is to place agricultural statistics on a comparable basis for purposes of intelligent interpretation.

Some countries do not take agricultural censuses, and figures from others are not comparable because they are not taken on a uniform basis. Studies are now being made of different censuses to the end that a world-wide, uniform census may be taken. The institute now has 71 countries in its membership and its crop statistics cover the bulk of the world's production.

## FACTS ABOUT A FAMOUS FAMILY



A farmer writes: "Our automobile and electric power plant have revolutionized our lives. We can get to town oftener, and have the conveniences of electric light and many labor saving devices."

—that the farmer  
may prosper and the  
nation progress

"What has the automobile meant to farm life?" asked the National Automobile Chamber of Commerce of thousands of farmers and their wives.

And they answered: "It has added 68 per cent to our productivity and improved our living conditions more than 40 per cent."

In one sense the contribution of the automotive industry to the farmer is the most important of all its contributions: for unless the farmer prospers, the nation cannot progress.

The General Motors family comprises not only companies producing cars and trucks but also the Delco-Light Company through whose products more than 200,000 farms have the electrical conveniences of city life.

## GENERAL MOTORS

BUICK • CADILLAC • CHEVROLET • OAKLAND  
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General Motors cars, trucks, and Delco-Light products may be purchased on the GMAC Payment Plan. Insurance service furnished by General Exchange Corporation



# Positive Proof That *Niagara* DUSTS and DUSTERS

offer the simplest—most economical and most effective method of protecting your fruit and crops from the ravages of insects and disease.

This is a strong claim and unless backed up with positive proof, one that is absolutely worthless.

Here are three statements on its effectiveness by disinterested authorities taken from hundreds in our files. We will furnish statements from growers and stations in any section on request.

## Mass. Experiment Station, Bulletin 214.

"Dust gave excellent control of apple scab in a year most favorable for the development of the scab fungus."

## Cornell Experiment Station.

"It has been shown that dusting with properly powdered materials is fully as effective as spraying. The operation is much more rapid in covering the orchard. An orchard of large acreage may be protected at critical times, a thing not possible with the slower liquid process."—Manual of Fruit Diseases, by Prof. L. P. Heiler and H. H. Whetzel.

## Bert Johnson Orchards (4,000 acres of peach orchard), Nashville, Tenn.

"Our experience with your dust for which we term our 'green sprays' is everything that could be asked. The produce men give us credit for shipping the finest quality of peaches in any section of the country this year. We dusted with your dusters and materials. It was an ideal season for Brown Rot and fungous diseases, and we overcame these entirely with your dusting materials."

But the strongest proof of all is the fact that every year for 9 years more growers have adopted the Niagara Method of Protection until today the demand for Niagara products requires the capacity output of the largest plant of its kind in the world.

Every grower will find it to his advantage to investigate the Niagara Method thoroughly and find out how to save money, time and crops by getting the right Niagara for his farm. Talk with your dealer or write us.

**Niagara SPRAYER COMPANY**

Middleport, New York

Hand—Traction—Power Dusters

## Oriental Fruit Moth

THE FOLLOWING is a summary of Virginia Bulletin 234:

The Oriental fruit moth (*Laspeyresia molesta* Busck), found first in and about the District of Columbia, has been present in this country for at least eight years—probably for a longer period.

The spread of the insect southward into Virginia has been relatively slow as compared to the spread north and northeast. At the present time, the infested area in northern Virginia embraces about 1030 square miles and comprises some 8700 acres of orchard, or being two and three per cent of the total commercial acreage of the state.

The moth is causing serious injury in the many small and uncared-for back-yard plantings in a commuting section of this area immediately adjoining the District. On the other hand, in the few large and well-cared-for commercial orchards in close proximity to these severe infestations, it has been doing surprisingly little damage, and, for the time being, the usual spray treatments regularly applied in these orchards are providing adequate control.

A careful study of conditions during the past six years has revealed a number of interesting facts partly explaining this situation.

The early and mid-season varieties up to and including Elberta, which ripen in northern Virginia between late July and early September, constitute 73 per cent of the commercial crop of the state.

These varieties are comparatively exempt from attack by this pest, since almost one-half of the potential infestation of the season occurs after mid-August.

The dates of the several applications of the established schedule of spraying for the control of other insects and diseases of the peach coincide closely with the dates of heaviest egg-laying and egg-hatching of the successive broods of the moth. Spray

protection for main-crop varieties from petal drop in the spring until the first pickings of Elberta in August, is, therefore, almost complete.

The moth, in its egg, larva and pupa stages, is becoming increasingly subject to attack by many parasites of our native fruit insects.

A high percentage of the larvae of this pest over-winter cocooned in and under trash and on mummified fruits on the ground, and in crevices of the bark and in crotches of the branches normally removed in pruning. The usual practices of clean cultivation and winter pruning (provided the brush pruned out is removed from the orchard and burned) assist considerably in reducing the numbers of the insect.

Experimentally, it was discovered that nicotine sulphate 40 per cent, . . . as a contact spray and by reason of the gas evolved, is decidedly toxic in respect to the eggs and hatching larvae of the moth. Later, in spraying some 40 acres of orchard, it appeared that the addition of this material at the dilution of one to 800 to the usual treatments on peach increased the spray efficiency from eight to 14 per cent in the case of this particular insect.

Spray economy suggests that the use of nicotine might not be advisable under conditions of extremely light infestation. Generally speaking, however, the combined spray applied to trees carrying a bushel crop or greater (using the \$2 figure as an approximate average-bushel value) should offer, in the presence of a probable fruit loss varying from five per cent for a three-year-old tree to 20 per cent for a 10-year-old tree, a return of from eight to 14 per cent over and above the additional cost in spray material.

When digging out borers, it is well to saturate all wounds with a solution of one tablet of mercuric chloride in one pint of water.



THE ANNUAL report of the California Fruit Growers' Exchange, as usual, contains some very interesting and valuable information.

Sunkist has become a household word in America and is worth several millions of dollars annually to California citrus growers, according to Manager E. G. Dezell. Thirty-six California oranges are now being eaten each year by the average person in the United States and Canada. Last year's consumption showed a gain of 15 per cent over that of the preceding season and more than 60 per cent over that of five years ago.

During the 12 months ending June 1, 1924, the exchange made a net gain in membership of 5851 acres, representing about 2500 carloads of fruit.

About 43,000,000 boxes of oranges and grapefruit and 5,500,000 boxes of lemons were marketed in the United States and Canada during the season ending October 31, 1924. The average orange box contains about 16 dozen and the lemon box 27 dozen.

Of oranges and grapefruit California furnished about 22,000,000 boxes, most of which were oranges. Florida supplied over 20,000,000 boxes, about 60 per cent of which was oranges and 40 per cent grapefruit.

California produced about 89 per cent of the lemon supply, and Italian imports supplied the balance. Lemon shipments from California for the season were 53 per cent greater than in 1923, and 3.7 per cent greater than in the record year of 1921.

The California Fruit Growers' Exchange marketed a total of 32,715 cars of oranges and grapefruit and 11,551 cars of lemons, or a total of 44,266 cars, representing 72.9 per cent of the citrus fruits shipped from California. The orange and grapefruit shipments totaled 14,800,069 boxes and the lemons 4,588,211 boxes.

Exchange members received during the year \$50,515,497, while the delivered value to the trade was \$76,219,240, it is estimated. Competition was severe during the year from heavy shipments of apples and bananas at low prices. The shipments of oranges and other products from Florida have increased 135 per cent in the last five years, thus necessitating, according to Manager Dezell, the most intelligent distribution of both the California and Florida crops.

A NEW non-profit co-operative association, called the Highland Mutual Groves, has recently been organized to serve the Highland and West Highland districts near Redlands, Calif. The association has contracted a large tonnage and promises to become a strong factor in the district. It is affiliated with the M. O. D. Jack Hagger has been appointed manager.

J. A. Strait, formerly president of J. Strait and Company, has been selected as manager of the newly organized Redlands Foothill Groves. This new association will take over the groves of the Strait Company in the Redlands district. C. E. Perry is secretary and M. Scudder is field representative. The association is affiliated with the M. O. D.

AN INTERESTING court case is in progress in New York state. The New York Canning Crops Association unfortunately has had difficulties and has incurred debts

amounting, according to reports, to a considerable sum. A change in management and reorganization was effected in June.

The association, in order to raise money to pay the indebtedness, voted an assessment of \$50 each on about 1200 growers who were members before January 1, 1924. Some have paid but others have not. In order to collect the necessary funds, the association has entered suit against one member as a test case. If the case is lost in the lower courts, the association expects to carry it to the higher courts. So far as known to the writer, the point involved has not previously been determined by the courts. The results of the case will therefore be watched with interest.

AS STATED recently in our columns, the Northwest Fruit Commission developed a plan last year for marketing the northwestern fruit crop. However, just about the time the plan was to have been launched, a heavy spring frost destroyed a considerable portion of the crop. There being no immediate need of an organization, the carrying out of the plan was delayed. Since the growers have been receiving fair prices for this year's crop, there is no general demand now that the plan be put into operation. It reminds one of the Arkansas party who sat in the rain because he couldn't put a roof on his house at that time, and who hadn't built a roof during good weather because he did not need it then.

The northwestern growers can profit greatly from a more comprehensive marketing organization, and they should be looking ahead and building the organization now so that when a heavy crop is produced it will be ready for efficient work.

The question was discussed at the recent meeting of the Washington State Horticultural Society by J. R. Schwartz of Yakima. He urged growers to keep the plan alive and emphasized that the fruit industry of the Northwest is one of the biggest unorganized industries in the country, representing a \$150,000,000 investment and producing annual crops worth about \$100,000,000. "Organized the industry is a towering giant, but unorganized, it is a weakling which is cuffed about at will," he said.

WHAT is reported as a very satisfactory meeting was held by the directors of the Michigan Fruit Growers, Inc., at the time of the annual meeting of the state horticultural society early in December. While the organization may not have accomplished during the past year everything some of its sponsors may have hoped for, general satisfaction was expressed by the directors over the results obtained. It was voted to proceed with the program. The directors decided to emphasize the idea of contracts between growers and local associations and between the various locals and the central sales organization. Now that a large proportion of the growers realize that the Michigan marketing problems must be worked out on a business rather than on a sentimental basis, it is expected that real progress will be made during the coming year.

AT THE recent meeting of the National Association of State Marketing Officials held in Chicago



early in December, the report of the Committee on Co-operation, headed by O. B. Jesness of Kentucky, contained the following essential principles: (1) That farmers themselves initiate all co-operative organizations. It cannot be decided for them by the government or other agency. (2) The public agencies should supply facts, prospects and limitations to help farmers to arrive at intelligent decisions. (3) It is important to develop co-operation carefully on the basis of full information. (4) Real educational work should now replace propaganda. (5) More publicity of balance sheets and mistakes should be made to aid new organizations to avoid failure.

**THE MICCO Citrus Growers' Association**, a new local with contracts controlling over 30,000 boxes of fruit, has recently become affiliated with the Indian River Sub-Exchange and the Florida Citrus Exchange. The officers are C. A. Cabell, president; T. H. Call, vice-president; and J. L. Counsel, secretary-treasurer.

**THE LATEST** local to join the Florida Citrus Exchange is the Howey Citrus Growers' Association. It controls more than 10,000 boxes of oranges and grapefruit. It is located in Lake county and is a member of the Highland Citrus Sub-Exchange. The officers are W. J. Howey, president and treasurer; M. G. Howey, vice-president; and S. K. Mare, secretary. The fruit is being handled this season through the packing house of the Clermont Citrus Growers' Association.

**INFORMATION** made available recently indicates that the efforts of the past two years to reduce the operating expenses of the Sun-Maid Raisin Growers of California, Fresno, Calif., are yielding results. In a recent report it is stated that the per month cost for capital has been reduced from 61 cents for the season of 1921-22 to 21 cents for the business year ending with August of 1924. Operating costs of the Fresno office of the selling division are also being reduced. For each \$100 expended during 1922, but \$85.20 was expended in 1923, and but \$32.60 in the first nine months of 1924.

Attention is called to the fact that if this selling expense were prorated over the total tonnage handled, the average cost per ton would be \$4.55 for 1922, \$3.83 for 1923, and 81 cents for 1924. It is considered that the difference between 81 cents and \$4.55 furnishes a measure for determining the significance of the efforts being made in behalf of greater efficiency.

**ON DECEMBER 1** the Arizona Citrus Exchange, Phoenix, Ariz., reported that about one-third of the crop of Marsh Seedless grapefruit had been sold. The fruit was of good texture and flavor and found a ready market. The crop was unusually heavy and prices are good. Each fancy Arizona grapefruit is now stamped "Arizona Desert Sweet" in red letters. The crop of Navel oranges is expected to be only about two-thirds as large as last year, when 50 cars were shipped. The fruit is of good quality and is bringing good prices, practically all sales being for more than \$6 a box delivered.

**ORGANIZED** in 1924, the Kent Grape Growers' Association, Inc., Dover, Del., is reported to be the first co-operative association of the kind in the state. It handled the grapes of 26 growers the past season, selling the combined output for \$41,000. As the association was able to make sales for several cents a basket more than the prices which prevailed in 1923, the members are pleased with the results obtained through their co-operative effort.

**THE SUN-MAID Raisin Growers' Association** now guarantees all raisins packed under the Sun-Maid brand

against infestation while in the hands of wholesalers and retailers. The association will replace with good raisins any stocks which become infested in the jobbers' or retailers' hands. Ralph P. Merritt, managing director, states that this is the most sweeping guarantee of quality ever put into operation in the fruit industry.

**THE CALIFORNIA Prune and Apricot Growers' Association** recently paid \$580,102 to its members in final settlement for dried apricots of the 1923 crop. The price averaged 2.38 cents per pound for the largest tonnage of dried apricots ever handled by the association. Previous advances had ranged from 2.5 to seven cents per pound.

As a result of strict economy, the cost of handling the 1923 crop was reduced slightly more than one-third cent per pound below the cost in 1922.

A final payment of \$337,343 has also been paid on the 1922 prunes. Prices varied from less than one cent per pound for off-grades to 12½ cents for the largest size of Sunsweet prunes.

**ONE OF** the biggest advertising campaigns ever conducted by a co-operative has recently been announced by the California Fruit Growers' Exchange. The plan provides for the expenditure of four and one-half cents on every box of oranges and seven cents on each box of lemons. Since the crop is estimated at about 50,000 carloads, the advertising budget will be a huge one.

The advertising, which is to begin in December, will consist of colored pages in magazines and special advertising in newspapers. It is estimated that 53,000,000 pages of magazine space will be used. Sixty-seven per cent of the budget will be devoted to consumer publicity, 28 per cent in reaching fruit dealers and five per cent for overhead expenses, according to Paul S. Armstrong, advertising manager of the exchange.

**THE ANNUAL** meeting of the Mutual Orange Distributors was held at Redlands, Calif., November 14. The following officers were elected: J. H. Straff, president; J. Canady, vice-president; and A. B. Cowgill, secretary. C. P. Early was again chosen general manager for the seventh year.

The manager's report showed that the organization handled during the year a total of 2,280,748 boxes of fruit, which represents a gain of 328,400 boxes over last year's shipments, or a net gain of 16.8 per cent. In 1923-24 the M. O. D. handled two per cent of the lemon crop of California and 10.4 per cent of the orange crop. There was a gain of five-tenths per cent in lemon tonnage and 1.7 per cent in orange tonnage.

The gain in acreage during the year was 2121 acres. Adding the acreage of five new groups which have joined recently, but which shipped no fruit the past season, the total gain in acreage is 3882 acres.

The gains in shipments and acreage are considered all the more remarkable because of the withdrawal of the Elephant Orchards, the Greenspot Packing Company, and the Hillside Packing Company, the tonnage of which constituted about 1000 cars.

Because of the small sizes and Florida competition, the prices received were not considered satisfactory. The Valencia season opened poorly but ended very satisfactorily. The small sizes tended to increase the cost of selling, especially telegraphing. The cost of marketing, including advertising, was 12½ cents per box.

A shock contract involving a maximum charge of 20 cents per box has been made for the coming year. A rebate of one and one-fourth cents per box was made on last year's shock account.

The Brogdite and Brogdex processes, with necessary machinery, are being installed in all packing houses. Marking machines are also being installed which will stamp the individual fruits



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This is but one of a complete line of Deming Spray Pumps built in All Capacities and Pressures to meet ALL Conditions.

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2 H. P. Novo engine. Capacity: 5 gallons per minute. Pressure: 250 pounds. Tank capacity: 150 gallons.



**The "Wheel-A-Bout"**

Fig. 874. Hand operated; 10 gallon tank, galvanized or brass as required. Rigid construction throughout.



**The "Century" Barrel Sprayer**

Fig. 645. All internal working parts of brass—proof against corrosion. Capacity, at 30 strokes per minute, 2½ gallons.



**The "Major" Barrel Sprayer**

Fig. 832. Lower in price than the "Century" because of smaller capacity and different barrel attachment. Capacity, at 30 strokes per minute, 1½ gallons.



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Fig. 933. 50 gallon tank with agitator. Will supply two leads of hose developing 150 pounds pressure.



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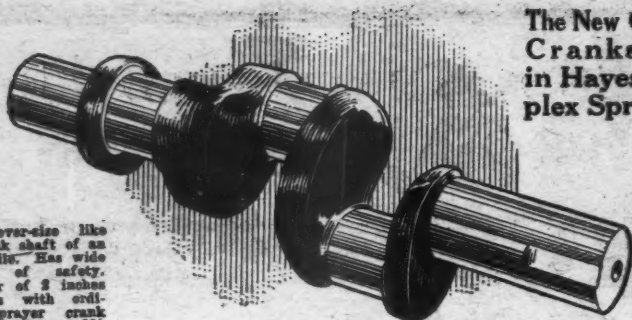
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Made over-size like the crank shaft of an automobile. Has wide margin of safety. Diameter of 3 inches compares with ordinary sprayer crank shafts which are 1 1/2 inches.

## Hayes Power Sprayers are Built Like an Automobile

The universal satisfaction which fruit growers have with Hayes FRUIT FOG Sprayers is largely due to the perfection of design, simplification of parts, and the margin of safety in every point of construction. Nothing could illustrate the character of manufacture better than this GIANT crankshaft.

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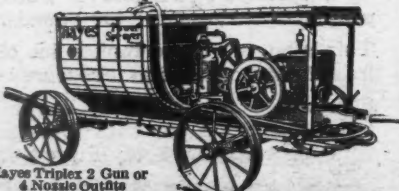
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Hayes Triplex 2 Gun or 4 Nozzle Outfit

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# HAYES

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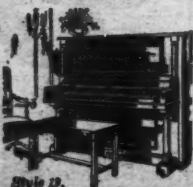
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# Markets and Marketing



FEDERAL standards are now in effect regarding the sizes of barrels used for fruits, vegetables and cranberries, and federal standards exist also for grape baskets, berry boxes and small till baskets. There are no standards, however, for baskets and hampers, and great confusion exists in this connection, according to the United States Department of Agriculture.

About 30,000,000 hampers are used annually. Because of variations in size and shape, it is impossible for buyers to know what they are getting. One-third of the so-called half-bushel hampers, it is estimated, are short measure.

Approximately 20,000,000 round stave baskets are used annually. There are about 20 sizes used; six sizes would be sufficient for all needs.

Similar conditions exist in regard to splint baskets, of which some styles are unnecessary and deceptive. The peck size has dwindled to one-fifth or one-sixth bushel in many cases, and the half bushel to 12 to 14 quarts. The standard peck and half-bushel sizes are seldom found.

The losses and claims in marketing perishables are due in large part to frail containers. The department advises that buyers of packages require manufacturers to furnish definite specifications according to which baskets and hampers are made. Such procedure would encourage the companies who are really trying to improve the quality of packages used.

The Department of Agriculture, which is trying to bring about standardization of baskets and hampers, has printed the results of its extensive investigation in Farmers' Bulletin No. 1434, copies of which may be obtained from the United States Department of Agriculture, Washington, D. C.

AFTER much confusion, it seems that the South Water street market in Chicago is actually going to be moved. After failing by every possible means to delay or prevent the conversion of South Water street into a double-decked thoroughfare by the city of Chicago, the produce men have apparently been convinced of the city's determination and are making definite plans to move. The street is already being wrecked.

Within the last few months, the selection of several sites has been reported but each time the plans failed to materialize. A report, that is now claimed to be official, seems to settle the matter.

An organization called the "South Water Street Market Trust" has been formed. A large proportion of the dealers have joined the trust; it is said.

There has also been formed a Produce Service Trust, which is headed by the same officers. It will take care of such matters as heat, cold storage, steam, incineration, garage and gasoline, office and bank space, and retail store locations.

For several months two real estate firms have secretly been acquiring the land lying between Fifteenth street and Fourteenth place and between Morgan street and Racine avenue. This site is only five minutes by truck from Randolph street and the loop and is said to be nearer and more accessible to the majority of railroad terminals than any other available location. There is a frontage of about 5600 feet in the new

site, as compared with 4000 feet in the present South Water street market.

Several railroads have offered to build new terminals for perishables or rebuild old ones, either of which would greatly facilitate the handling of produce by the new market.

The work of wrecking the old buildings will be started immediately, it is reported. Contracts have already been let for the erection of new buildings, and plans have been drawn. It is planned to have the new quarters ready for occupancy in October, 1925.

The project will include 166 three-story steel and fire-proof buildings, faced with terra cotta. Space is available for 240 stores on the site. A 20-story building will house banks, credit associations, club rooms, brokers and receivers. Provision is also to be made for an incinerator, garage, room for restaurants, cigar stores, etc.

The streets in the new market will be 90 feet wide. The sidewalks will be 16 feet wide and 30 inches below the level of the streets. Alleys are to be 40 feet wide. There are to be permanent canopies over the sidewalks.

The site at Twenty-seventh and Ashland avenue, previously reported as being selected, is still under consideration as a joint railway terminal capable of accommodating 5000 cars.

It is expected the project will cost \$20,000,000. A Chicago syndicate of banks is backing the movement. Bonds to the extent of \$14,000,000 may be offered the public.

The Chicago marketing plans are of great significance to growers of perishables because, if properly carried out, they will result in less waste and delay and in greatly increased efficiency in the marketing of produce in Chicago, which is one of the most important markets in the country.

RECENT statements from the government and other economic agencies indicate that the purchasing power of farm products is now 87 if we consider that of 1913 as 100. The value of the farmer's dollar is 12 to 15 cents higher than it was a year ago, and it is now about 20 cents higher in value than during the low year of 1921.

While the value of the farm dollar is more satisfactory than was the case sometime ago, the index figure for farm products is still about 20 points below the average wholesale price of non-agricultural commodities. About a year ago the index figures for farm products and non-agricultural commodities were about 40 points apart.

Such comparisons may appear to be uninteresting, but they are of the greatest importance, for, after all, it is the price relations between farm products and other commodities which really determine whether or not agriculture is profitable to the people engaged in that industry. The point of interest to us at the present time is that food producers can now take the prices received for their products and deal more nearly on a par with other industries than has been possible for several years. We have not yet reached the state, however, in which the prices of farm products are on a par with the average prices of other commodities.

ACCORDING to present indications, based on government and private estimates, the farmers of the United States will sell approximately 10 bil-



Non dollars' worth of products for the year ending June 30, 1925. This will be 3800 million dollars more than was sold in the low year ending June 30, 1922, and only 4000 million less than the highest mark ever reached, which occurred during the year ending June 30, 1910, when the farmers sold 14 billion dollars' worth of products.

Fruit growers as a group will have practically the same returns during the year ending June 30, 1925, as in the preceding year, according to present predictions, notwithstanding the much reduced crop of some fruits this season. The income of apple growers will be about 15 million dollars less on the whole than last year. On the other hand, the income of growers of other fruits will be greater this year than last year.

TO NOVEMBER 16 California had shipped 53,235 cars of grapes. It was estimated that from 500 to 1000 additional cars would be shipped before the close of the season. The total shipments for 1923 amounted to 53,684 cars.

THE BRITISH ISLES annually consume about 27,000,000 boxes of apples, half of which are normally produced at home. Of the imported apples, the majority comes from the United States. Shipments from Canada rank next in importance. Imports are also made from South Africa, France, Holland, Italy, Russia, Australia and Tasmania.

In the past there has been some prejudice among English consumers against fruit products held in storage, but this is fast being overcome. Apples are now frequently stored for some time in England.

During the week of the annual fruit show held each year about November 1, a campaign is conducted to stimulate greater sales and consumption of fruit. The retail shops are divided into four groups, and prizes are offered each group for the best window displays made during the week.

H. V. Taylor, deputy controller of agriculture for the British Isles, has been visiting various fruit sections of the United States during the past two months for the purpose of studying American methods of harvesting and packing fruit.

NOTWITHSTANDING the fact that Detroit consumes millions of dollars' worth of perishables annually, it has but one cold storage plant. Cleveland, a smaller city, has five, and several other smaller cities also have more than Detroit. As a consequence, products consumed by Detroit must be stored elsewhere, causing losses and increasing costs for both producers and consumers.

A movement is now on foot to organize another cold storage company at Detroit. A letter was recently sent out by a "Committee of Ten Detroit Produce Men," calling attention to the situation and requesting the opinions of others as to procedure.

THE SUPREME Court of Washington recently handed down a decision which has much significance as indicating the trend of thought regarding regulation of the commission business.

Sometime ago the state passed a law requiring all commission houses in the state to give bond, take out licenses, and keep accounts according to a general prescribed plan so as to be able to show the exact disposition of products handled, including the names of the shippers and purchasers and the prices realized.

The commission houses protested. Nine firms took out licenses in 1923 but none took out licenses in 1924. A test case was carried to the Supreme Court, which upheld the law, except as to the provision giving the Director of Agriculture power to revoke a license without a hearing.

As matters stand now, all of the commission houses have been operating unlawfully part or all of the time since the law was passed. Each transaction can be held as a separate

offense. There is little doubt but what all of the firms will take out licenses covering 1924.

It is gratifying to know that the state of Washington has such a law on its books and that the courts have upheld it. Every state ought to have a similar law. Better still, we ought to have a national law covering this important matter, for some states will probably be unable to secure passage of such a law, and, furthermore, we need wide uniformity in the application of such a law.

ACCORDING to the annual report of the Bureau of Agricultural Economics, shipping point inspection of fruits and vegetables increased during the past year from 73,000 to 129,000 cars.

MARGINS and costs in the marketing of Washington apples, 1922-23, are analyzed in a preliminary report recently issued by the Federal Bureau of Agricultural Economics. The report is based upon data collected from 13 fruit shipping organizations located in Washington, and upon jobbing and retail prices obtained in the New York Port District. Copies may be obtained from the Division of Information, Federal Bureau of Agricultural Economics, Washington, D. C.

A STUDY of the retailer's cost of marketing various products has been made by the New Jersey State Bureau of Markets, among a number of dealers in Trenton. Stores report to the bureau each week their buying and selling prices of the various fruits and vegetables. As a result of this study, Frederick V. Waugh, price specialist with the State Bureau of Markets, has been able to calculate the usual margins made on 20 commodities in Trenton. These margins average from 21 per cent to 23 per cent on commodities sold by the half-bushel and are much higher—from 30 per cent to 40 per cent—on commodities sold by the quarter peck and pound. It is necessary for the retailer to make a big margin when he has to break up a package and weigh or measure out a lot of small amounts, but when consumers are willing to buy commodities in the original containers, the retailer's cost is considerably less. The consumer gets his food at a reduced price and the farmer gets a bigger per cent of the consumer's dollar, Mr. Waugh states.

A WORLD prune shortage exists, according to a report of the California Prune and Apricot Association which has recently finished an investigation of the visible prune supply. The carry-over from last year's large production and the estimated yields for 1924 are shown in the following table:

	Available stocks— Sept. 1, 1923.	Sept. 1, 1924.
	Pounds.	Pounds.
California carryover.....	60,000,000	24,000,000
California new crop.....	220,000,000	200,000,000
Oregon carryover.....	10,000,000	2,000,000
Oregon new crop.....	60,000,000	35,000,000
European crop.....	150,000,000	55,000,000
	500,000,000	318,000,000

These figures indicate that a large shortage of prunes exists. This year's crop is 182,000,000 pounds less than that of last year. Taking into account the carry-over from last year, there are available for sale during the coming year 156,000,000 pounds of prunes less than were sold last year.

In view of the conditions, the directors of the association have advised members that it is their intention "not to reduce prices on 1923 stock yet unsold and to stay off the market until such time as prices will return a living wage to the grower." The directors believe this will be a sellers' year and that there is no need to sacrifice the crop.

The British Steamship Bayano recently sailed from Honduras to England with 92,000 bunches of bananas, which is said to be the largest shipment of bananas in history.

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## Cull Apple and Pruning

(Continued from page 5)

other words, the top has outgrown the bottom branches. One of the main things needed, then, is to check the stronger branches (see Figure 3) and give the lower branches an equal chance to grow and fruit well. This operation (heading back) also lowers the height of the tree as a help to har-

heading back to avoid injury to remaining branches.

Get the tree balanced when young. If this is not done, the only way to secure good, strong, low fruiting wood is to balance the older tree by heading back.

**Thin Weak Lower Wood for Light, Air and Space**

One other pruning operation needed is the thinning out of the weaker lower wood to give light, air and space to grow, but principally to rejuvenate it. The pruning needed varies with the variety. With varieties like Stayman, Grimes and McIntosh, which tend to form only moderate numbers of blossom buds when growing well, thinning out of smaller branches is generally sufficient. On the other hand, with varieties like Wealthy, York, and Transparent, which tend to form excessive numbers of blossom buds biennially, "detail" pruning is needed in addition to thinning out of the smaller branches (see Figure 1). Older trees of such varieties have masses of small run-out wood; there are too many growing points. It is better to remove some and secure better growth and fruit from those left.

Pruning by removal of large branches does not give the response needed. Pruning responses are most evident close to where the cut is made. At least, the removal of a large limb from an old tree has very little apparent effect upon the smaller spurred growths on an adjacent large branch. It is necessary, then, to cut close to where the response is wanted. This means many small cuts and better growth throughout the tree.

### Summary and Recommendations

No "system" of pruning is offered. A suggestion is made for relief from the production of little apples. The trouble varies. Likewise, the treatment changes, based upon the growth conditions of the tree.

Not all detailed pruning rejuvenates. If a branch is much smaller than the one from which it arises, that is, if a branch is greatly unbalanced, pruning on it further dwarfs it. So, detail pruning of such branches further unbalances them. Practically no pruning response is secured.

Marked improvement in fruit size, and especially uniformity of size, regularly follows careful pruning under cultural conditions where any response from the treatment can result. If the cultural conditions are so poor that no

<sup>1</sup>A detailed discussion of pruning in relation to fruiting will appear in Wis. Agr. Exp. Sta. Bul. 374, Prune the Bearing Tree, to be issued about March.

(Concluded on page 41)

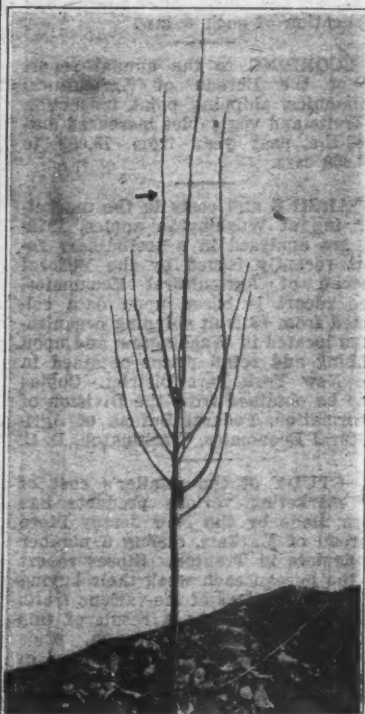


Figure 2—Keep trees balanced from the start by removing strong branches and by heading back. A modified leader prevents crotches, even when branches are of equal size. Arrows indicate where above tree should be pruned.

vesting and spraying and admits light to lower branches. The item of greatest value to the fruiting condition of the tree is the strengthening of the lower branches.

Not much suckering results if the cuts are made to relatively good-sized lateral branches. Cutting back to small lateral branches is bad not only because of suckering, but healing of the cut is slow.

In some sections there is danger of sunscald. Here, care must be used in



Figure 3—Heading back to good-sized laterals checks the stronger branches and encourages the weaker ones. This tree shows an equally good growth throughout, which is highly desirable.



## Book Review

### New Book on Grape Culture

D. R. U. P. HEDRICK, well-known horticulturist of the New York Agricultural Experiment Station, has added another excellent volume to his long list of able works. The revised edition of the "Manual of American Grape Growing" is his most recent achievement.

The book has been brought thoroughly up to date. With the rapid developments in methods of grape culture, a revised edition has been needed for several years. The subject is treated in a broad way and the various chapters include grape regions, propagation, stocks and resistant vines, fertilizers, training and pruning, grapes under glass, crop pests and their control, grape products, grape botany, grape breeding, and other important phases. There are special chapters on pruning and training of grapes in eastern sections and another on grape pruning on the Pacific Coast.

Anyone interested in grape culture, no matter in what section of the country he may live, will find the book of great value. The standing of its author in the horticultural field is sufficient recommendation to those who know him. The book is sold by the MacMillan Company, of New York, and sells for \$3.25.

### Tree and Shrub Insects

BOOKS have been written pertaining to the insects of practically all economic plants, but so far as the writer knows, the "Manual of Tree and Shrub Insects" is the first book which treats especially the insects of trees and shrubs. The book, therefore, fills a distinct place.

The manual gives brief, clear descriptions of large numbers of insects. These, with the excellent illustrations which are presented, will enable anyone to quickly and easily identify most of the common insects of trees and shrubs. Directions are given in each case for the control of the pest.

The book is written by E. P. Porter, state entomologist of New York. It belongs to the Rural Science Series edited by L. H. Bailey. It is published by the MacMillan Company, of New York, and sells for \$5.

### Variety Identification

THOSE who are interested in variety identification can secure much assistance from a book entitled, "Cyclopaedia of Hardy Fruits," written by U. P. Hedrick.

The book does not contain as much detailed information as is found in the volumes on the fruits of New York, also written by Hedrick and his assistants. Nevertheless, it gives clear descriptions of varieties, together with figures, without color, which will enable readers to identify many varieties. The standing of the author in the horticultural field should be a sufficient testimonial for the book. The book is published by the MacMillan Company, of New York, and sells for \$6.

### The Farmer and His Wife

FRUIT growers of the country will be glad to learn that a woman from their own ranks has recently written an interesting book on conditions in fruit growing and farming. The writer is Mrs. Evelyn Harris, of Betterton, Md., and the book is entitled "The Farmer and His Wife."

When her husband died last spring, Mrs. Harris was left with five growing children and 25,000 fruit trees. As a fruit grower's wife, she had learned the disadvantages and hard work under which farmers and fruit growers are laboring. Since losing her husband, the realities of the situation

have been brought home to her in a more vivid manner than ever.

Mrs. Harris describes in her book her thoughts regarding agriculture. She brings out in very forceful fashion some of the difficulties which food producers must meet, particularly from a farm wife's point of view. She tells of the hardships of the farm, the low prices, the high operating costs, the difficulties of raising a family under the conditions, and the unfairness of conditions from an agricultural standpoint. In short, she covers a variety of subjects and she brings into the story much of her own experience that makes the book real and adds to its interest. AMERICAN FRUIT GROWER MAGAZINE readers will be interested, we are sure, in reading this book. It may be obtained directly from Mrs. Evelyn Harris, Betterton, Md., for \$1.

### Book on Marketing

"READINGS in Marketing" is the title of a new book written by Fred E. Clark. It treats the subject in a broad way and attempts to show the relations which exist between different lines of business. The development of our present-day system of marketing is outlined, both with reference to other branches of industry, such as department store development, etc., and to the marketing of agricultural products. The book is sold by the MacMillan Company of New York and sells for \$3.25.

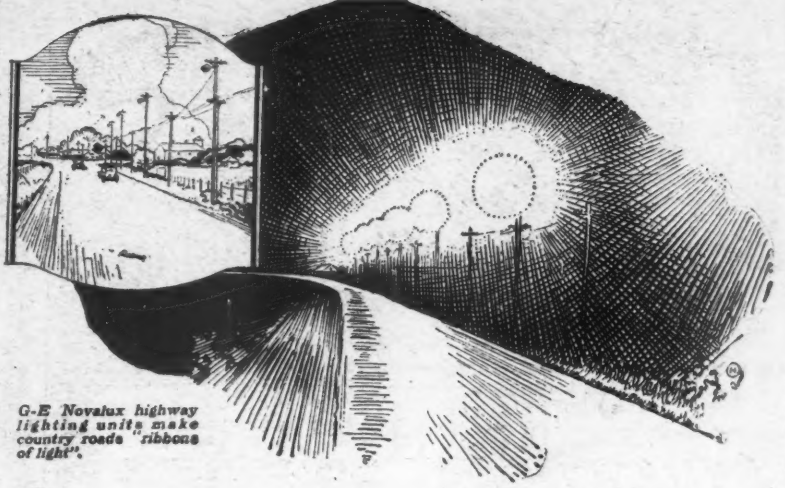
### Insects and Pests of Satsuma Oranges

"INSECT Pests and Diseases of the Satsuma Orange," written by H. L. Dozier, is the title of Educational Bulletin No. 1 of the Gulf Coast Citrus Exchange. The bulletin gives descriptions, pictures and control methods for all of the insects and diseases affecting Satsuma oranges. Directions are given for making spray materials, and a spray calendar is included. The circular may be obtained from the Gulf Coast Citrus Exchange, Silverhill, Ala., for \$1.

### Cost of Producing Apples in Minnesota

"COST of Producing Apples in Minnesota" is the title of a bulletin just issued by Professors W. G. Brierley and W. J. Koppen, of the Minnesota Agricultural Experiment Station. The authors draw the following conclusions: "Well managed orchards in Minnesota are producing satisfactory yields and are returning a good net income. Improvement of the methods of management is imperative in many orchards or the land should be used for other crops. Most of the orchards in the state should be thinned to give the remaining trees more light, food, and moisture, and to increase the yield. Most of the sod orchards are low in vigor. Yields could be increased markedly by a change in cultural methods. As high yields have important bearing on the gross and net returns, growers should improve their methods of management whenever possible in order to obtain the best possible yields. Inefficient spraying has been the cause of much of the poor condition of the crop. Three or four sprayings properly applied would produce crops of far better grade. Grades need to be better defined and sorting done more rigidly." Free copies of the bulletin may be obtained from the University Farm, St. Paul, Minn.

The Department of Agriculture is planning to devote the 1925 Yearbook largely to horticulture. It is reported that experts of the department are now at work preparing material for the 1925 volume.



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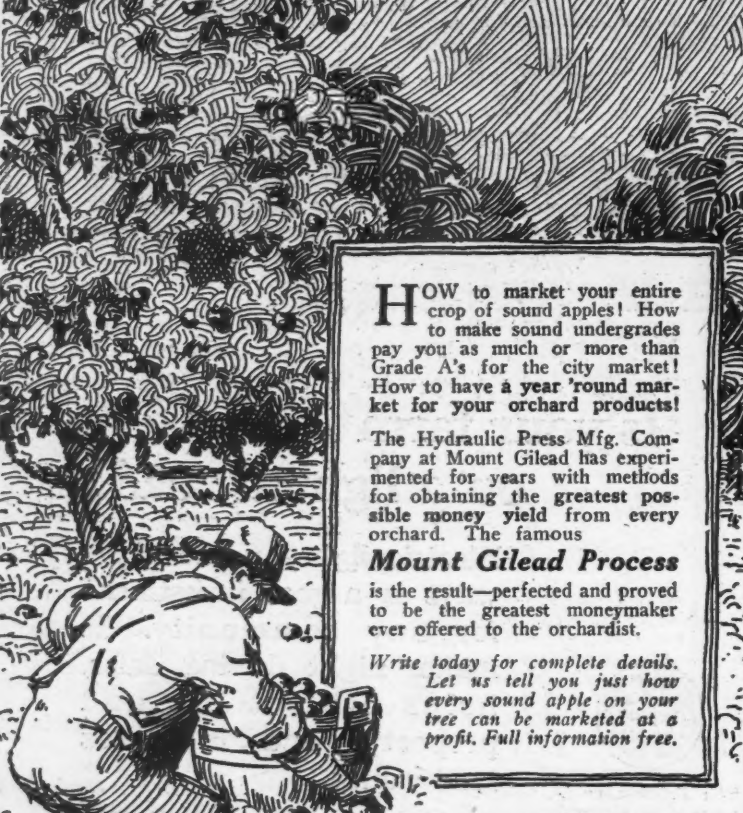
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## Commercial Production of Fruit Concentrates

(Continued from page 10.)



A modern type of vacuum pan adapted for fruit beverage manufacture

to place various interested parties in communication with each other so that the various interests may cooperate to the advantage of themselves as well as to the advantage of producers and consumers.

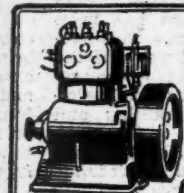
## Sweet Cider Regarded the Great American Beverage

"UNFERMENTED apple juice or sweet cider may justly be called the great American beverage. It is more generally popular and is made and consumed in much greater quantities than any other beverage juice. As the making of cider is regarded by fruit growers as the surest means of securing an outlet for surplus fruit, it is a very widely distributed farm industry, the total production fluctuating greatly from year to year. Thus, in 1899 the production of cider on farms reported in the census was 55,280,199 gallons, with an additional 12,363,656 gallons converted into vinegar. In 1909, a year in which the apple crop of the Middle and South Atlantic and East North-Central states was a partial failure, the production of cider on farms dropped to 32,583,993 gallons, with 7,246,632 gallons of vinegar. The widespread character of cider making as a farm industry, and its safety-valve relationship to the growing of fruit, are indicated by the fact that this total production was reported from 332,810 separate farms, representing every state in the Union, and that the average production per farm was slightly less than 100 gallons. While the figures upon production obtained by the last census are not yet available, it is certain that the increased demand for nonalcoholic beverages has resulted in a considerable increase in the production of cider on farms as well as in commercial plants."

The above is from Farmers' Bulletin 1264, "Farm Manufacture of Unfermented Apple Juice," available for free distribution on application to the United States Department of Agriculture, Washington, D. C. This bulletin tells how to make cider.

THE PEACE river country, lying hundreds of miles north of the Canadian boundary in the great wheat section, now claims the ability to grow fruit. Plum, cherry and apple trees came into bearing this year at the Dominion Experimental Farm near Beaver Lodge, Alberta. Red currants have been producing excellent crops. Canadian experts state that many kinds of fruit can be produced successfully in that section. The latitude is comparable with that of Siberian Russia, but the climate is tempered by the winds blowing across the Rockies from the coast of British Columbia,

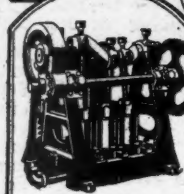
## Why be Satisfied with less



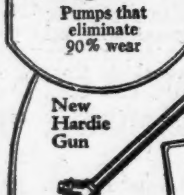
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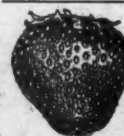
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# The Orchard Home Department

by Mary Lee Adams

## What Is a Wife Worth?

THE ANSWERS to this question, as cited by the *American Agriculturist*, brought such varying estimates that the farm wife feels hardly better able to place a value on herself as a business asset than before she heard what other people thought about it. Indeed, such a question is almost as vague as the time-honored "How big is a baby?"

But out of the fog of comment there emerges quite plainly the idea that women, at least farm women, have in the past been grossly undervalued and overworked, and that while their just deserts are now better appreciated, they still often fail to get them. What ought the active wife's earnings to be?

One woman submits figures, which are painfully convincing, to the effect that she has earned (but not received) nearly \$4000 for each year of her 30 years of married life. Such gigantic items as cooking and serving 235,425 meals, baking 33,190 loaves of bread, etc., etc., mount up to an amazing total. Her claim seems to be well supported by the statistical calculation of Miss Feddes of the University of Nebraska, who figures that the average farm wife would earn in domestic wages exactly \$4004.04 per annum.

But if the husband makes less than \$4000, it is evident that he cannot pay his wife what she is worth. He may not be able to earn anything like what he is worth. The 30-year wife aforesaid appears to realize this, and adds that she would gladly do it all over again for her husband and children. From a man, surely a generous one, comes the assertion that many good women have "slaved themselves to death" and formed but one link in the chain of wives required by a man to take care of his house and ever-increasing family.

It might clear the air a little if we admit, in the first place, that even in this advanced age a man is more generally able to make a sufficient living for himself and others than a woman. But if he can better provide the necessities of life, the right kind of wife adds to these the things that make life worth living—a bright, comfortable home, happy children, community of interest and sympathetic companionship. These values are not calculable in dollars and cents.

Good husbands, since their eyes have been opened to the fact that the "continuous performance" demanded by housework takes toll of woman's strength as surely as his own more strenuous and more intermittent labor, do all in their power to lighten the wife's cares by providing every labor-saving device within their means. If they must still regret that she has too much to do, they may, without a penny of extra outlay, provide for her happiness the one greatest thing. The Bible says, "The greatest of these is Love." Even a tired wife, after 30 years, is much refreshed by the demonstration of affection.

## Our Community League

THERE'S nothing so good for a neighborhood as neighborliness, and nothing better for promoting neighborliness than a live Community League. In my own fruit growing locality, we have combined the activities of a Community League with the School League. The size of our neighborhood makes this combination advisable, and it works well.

Everyone realizes that the children are the dearest concern of all, so much time and thought are devoted to their welfare. In addition, we work for more general interests. Our activities include the Community Christmas Tree, amateur theatricals, lectures and the big neighborhood gatherings.

Annually, we celebrate with a grand Rally Day, held in the spacious school grounds just before the opening of

the fall school term. What good fellowship! What savory picnic lunches! What jolly games shared by young and old, rich and poor alike! The glow of it lasts throughout the year.

Another busy day is celebrated by a Rummage Sale, and since the word rummage is suggestive of something worthless, we substitute the title "White Elephant Sale." Our white elephants may be very handsome and valuable but of no use to us. We contribute them to this sale, and those who can make use of them, buy them at a low price. The proceeds go toward securing community betterments.

The Red Cross finds willing workers among us when their annual drive takes place. Being organized, we have the advantage of earning a percentage on every 100 memberships secured by us. Another drop in the community coffers.

The last meeting of the league was devoted mainly to consideration of school needs. We decided that the smallest children would benefit by a separate playground with swings, slides, etc. They will get this before long. We discussed how we might help our colored neighbors (to whom a school bus has already been donated) to renew the worn steps of their excellent school. The Health Committee planned for the clinic soon to be held for the neighborhood children. The President organized our part in the Red Cross Drive.

Business disposed of, the chairman of the amusement committee quickly inaugurated an old-fashioned spelling bee. This was held amid shouts of laughter, the spontaneous, friendly laughter which is good for us all. Have you a Community League in your neighborhood? I'm sure you would find it a great addition to the pleasure and welfare of all concerned.

## The Best of Gardens

WHAT is the best flower garden?

The natural answer would be "That depends on your taste." But the garden I have in mind suits every taste, yours and mine and the next woman's, better than any other garden could. For it seems to me that the best gardens of all are those we dream, joyously, recklessly, just to suit ourselves, in that season when it's still far too cold to plant but none too soon to plan.

Can any real flowers bloom as freely and radiantly as the brilliant blossoms we picture against the white snow outside the window? The very thought of their warm beauty seems to raise the temperature. And what a fascination there is in saying to oneself "I'll have peonies this year in a solid mass just there, against a splendid background of expensive evergreens." Darn the expense anyway. It costs nothing to imagine such a glorious garden as would take innumerable dollars and quite a few skilled gardeners to create.

At least once a year it's our privilege to indulge ourselves in these extravagant fancies, and it's a wise indulgence. Just as it is true that we must set ourselves an ideal higher than we can possibly reach in order to reach the highest of which we are capable, so the lovely and unattainable gardens we dream of are a helpful influence later on when we sit soberly, nursery catalogue in hand, and jot down a list severely limited by the inexorable prices opposite each item.

Even here there is cheer, for some very desirable plants are so hardy and lavish in growth that the owner usually has more than she needs. How lucky then is the orchard woman who has friendly neighbors with whom to exchange surplus roots and slips.

## Furnishing Cottage Homes

WITH maids rapidly becoming as extinct as the dodo in rural districts, the many advantages of small, easily-kept dwellings have become apparent to householders. More people of taste and refinement are living in small houses, bungalows and cottages than ever before. These people naturally demand charm in their surroundings. It is, today, easily possible for them to secure it.

At last the small house has come triumphantly into its own. Many a young bride now feels a sincere preference for the wee home which circumstances dictate. She knows it is within her power to make it quite perfect of its kind, and the thought of expressing her own personality in a few rooms is more inviting and stimulating than the idea of turning over a many-chambered mansion to the mercies of an interior decorator.

### Look Before You Leap

If you are unwilling or unable to allow professional decorators to dictate your taste and empty your purse, you may yet profit by their skill. Their works will be found in shops where the best is shown in modern furniture for houses both great and small. Booklets and magazines can be studied that have fine illustrations of attractive rooms. The homes of wealth and good taste where you may visit are full of suggestions.

Keep your eyes continually open for such things as appeal to your individual sense of beauty. The cost of them might be prohibitive if purchased outright but, given the esthetic sense and adaptability that most women happily possess, charming effects can be reproduced by the amateur who wishes to make of her house a dear little home.

### Keep It Simple

Imitations of elaborate furniture would be sadly out of place and indeed shocking in a modest cottage. Simplicity will be found far more satisfying. Of course, there's the seeming simplicity of that perfected art that conceals art. Like the tailor-made gown, it looks plain until the tailor's bill comes in. Many talented artists are giving their time to the development of so-called cottage furniture. The simple gems they create would look suitable even in a small house, but it would require a long purse to buy them.

Among your orchard friends there may be women who have successfully reproduced the charm of rooms of which the originals would be entirely beyond their means. They haven't made the mistake of seeking "fussy" effects. The keynote of their best results is simplicity of design and of treatment. There must be hundreds of orchard women who, with the resources at hand, could convert commonplace surroundings into artistic and delightful rooms.

Instead of upsetting the whole house, it is better to take one room at a time and develop it as a single attractive unit. Later you may bring the rest into harmony with it. Maybe it's the living room that cries aloud for aid, or the guest room has never been so dainty as you desire.

If the room is unfurnished, your task is easier. Find the store where you can pick out the plain, unspoiled, unpainted furniture necessary. Or call to your aid the local carpenter and let him fashion the required pieces, simple in line, solid, and with the smooth natural surface of the wood ready for decoration.

### Personally Painted

You may have laughed over Ellis Parker Butler's humorous sketch, "Personally Painted," but there's no need for the woman with the paint pot to take part in any such smeary

tragedy. Paint plays a conspicuous part in the new cottage furniture. An impatient temperament and the desire to see quick results are the pitfall of the woman who simply won't wait for the first coat to dry before applying the second. Gummy misery is her lot. A degree of patience is essential. Think out your color scheme fully, in advance. The modern tendency is toward a liberal use of black. Employed to bring out other lovely tints, black produces some very rich effects without becoming garish.

In the show rooms of a model modern cottage, I observed that no detail was considered unimportant. Rugs lay on floors colored to form a judicious harmony with them, as well as with the draperies, furniture and walls. The pictures, while good, were chosen not so much as individual works of art as for rightly toned wall decorations. The very candlesticks on the mantel were designed for the particular room. They belonged just there and not elsewhere.

In the bedroom, what delicious old-fashioned china on the wash stand! "What!" you exclaim, "Washstands in this day?" Yes, indeed, and most decorative they were. After all, unless your modest cottage has a bath with every bedroom, the wash stand with its pretty towels and colorful china, is very handy in the guest room. I feel a pronounced preference for the most quaintly shaped flowered bowls and ewers, but some examples of pitchers and basins of colored glass proved a very happy selection.

Excellent effects in bedroom furniture were obtained with paint, or more simply still with a thin stain of gray, blue or green with trim of black, deep blue or gilt. Considerable skill is needed to introduce elaborate painted designs so, unless of proved expertness, the amateur is well-advised to stick to plain panels with contrasting trim rather than to attempt close patterns of brilliant flowers.

It is also safer to have plain toned walls and to trust to pictures, polychrome mirrors, vases, etc., for relief and variety. A bedroom may be very sweet with flowered paper on the walls, provided there are no colored pictures hung on them and no draperies of figured material. Rush bottomed chairs with painted frames, and rag rugs on stained or painted floors, are entirely satisfying.

### Hints from a Living Room

The gem of one model cottage I explored was a living room in which black and red had been so admirably combined that, besides being very striking, the effect was warm, cosy, even restful, and unusually pretty. The floor covering was of linoleum painted a dull red. Smooth, bare, painted boards would have answered almost as well. A large rug of mixed dark gray with black border, softened its glow.

Walls of lighter gray were relieved by a black baseboard and by doors, window frames and mantel of white with black trim. The hearth was of dull red tiles. A clever curtain for the fireplace was of coarse gray material almost like hop-sacking, run on a small rod and with a three-inch embroidered band of bright flowers in wool cross stitch at the bottom.

The chairs were of solid black upholstered in Chinese red chintz, with large black and gray design. Curtains and portieres were of the same chintz with black border. On the mantel stood two tall, deep blue candlesticks with red shades. An oval polychrome mirror, hung lengthwise over the center of the mantel, completed a very artistic panel.

The pictures, framed in plain black moldings, were delightfully colored prints, of which there are now such a large and inexpensive variety. Nothing in this room failed to add to its charm as a decorative unit, yet there was sufficient variety to avoid monotony.



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## CHATS WITH FRUIT GROWER'S WIFE

By HAZEL BURSELL



## Keeping Household Accounts

DO YOU know where your money  
went this last year? How much  
did it cost to feed the family, buy  
clothes for the members, etc.? The  
only way to know how the money was  
spent at the end of the year is by  
the keeping of accurate household  
accounts. And January 1 of each  
year is the day on which to begin  
keeping them. Now is the time!

"What good will it do for me to  
know how much money I spent last  
year and for what articles?" you  
immediately ask.

### You Need the Records

First, the information obtained  
from totaling up the various items in  
the household account book will be  
needed when it comes time to fill out  
the income tax returns. How can the  
Man-of-the-House answer questions  
pertaining to food, shelter and cloth-  
ing if no record has been kept? He  
cannot give the disbursements and re-  
ceipts from the farm unless he keeps  
a daily record of his purchases and  
sales during the year. It is contrary  
to law to "guess at" these things.  
Besides, how are you to know whether  
or not you have to pay a tax on your  
net income if you have kept no record  
of expenses and receipts?

Second, farming is a business, and  
household management is part of that  
business, and no business can long  
succeed unless it "keeps books." Every  
business man or woman has to know  
the exact cost of doing the various  
things connected with his or her  
establishment, for only in this way  
can the sources of unnecessary ex-  
pense be found and eliminated. Waste  
eats up profit. The housewife needs  
her records so that at the end of  
the year she, together with her  
husband, can go over the accounts  
carefully, analyze them and find the  
poor investments.

If you have been buying clothing  
from a certain firm and they have  
given you poor quality, the books will  
tell the story in the number of re-  
placements. Next year you will know  
that you can save money by purchas-  
ing a better quality, especially in the  
things that must stand hard service.  
Suppose you find that it has taken  
eight or 10 sacks of sugar during the  
year for a family of five. You will  
know at once that that is too much  
sugar, and next year you can serve  
more canned and fresh fruits and  
fewer preserves. You will increase  
the size of your savings account and  
your children will be healthier as a  
result. If your doctor and dentist  
bills are extraordinarily high, you had  
best look for the cause. Big doctor  
bills, except in the case of accident  
or some organic diseases, usually can  
be traced to wrong ways of living.

### Save Systematically

Every business, to be successful,  
has to save money when business is  
good against the time when business  
will not be so good. Saving must be  
done systematically, and to save sys-  
tematically the family must work on  
a budget. Set so much aside each  
month. You cannot take a ready-made  
budget published in some magazine  
and expect it to work for your par-  
ticular family, but you must devise  
one that will meet your needs.

The budget and household accounts  
go hand in hand. You cannot hope  
to devise a budget until you have kept  
accurate daily accounts for at least  
one year, so that you will know ap-  
proximately how much money you  
have to spend and what proportion of  
your income must go for food, cloth-

ing, shelter, recreation and savings.  
From these records you can devise a  
workable budget, and from your ex-  
periences last year you will know  
just what you can do in the various  
items and still keep within your  
allotted amount. Then the year fol-  
lowing you can devise an even better  
budget.

Contrary to popular belief, household  
accounts are not much trouble to keep,  
if brought up to date every day. That  
is where most folks fall down. You  
can buy a compact account book with  
little sections ruled off for every day  
in the month, and classified under the  
various headings of food, clothing, in-  
vestment, recreation, household sup-  
plies, receipts, etc. All you have to  
do is fill in the amount under these  
headings for that date. You will find  
it interesting instead of tiresome. If  
you have children who are old enough  
to understand and do accurate work,  
let them do it. They will be immen-  
sely proud to have the responsibility of  
doing this work.

## A Health Talk

THERE are many rules for keeping  
in good health. Boiled down to  
their basic principle they all amount  
to this—Common Sense applied to the  
business of living.

Food, of course, is one of the big-  
gest factors in good health. A ma-  
jority of Americans overeat at every  
meal. People have a sufficiency long  
before they get that "can't-eat-another-  
bite" feeling. Overeating makes peo-  
ple fat, slow, sluggish, is ruinous to  
complexions, and leaves the body in a  
condition that is easily susceptible to  
disease. Too much meat is another  
American food fault, making for kid-  
ney and stomach disorders. Meat  
once a day is enough, if plenty of eggs,  
butter, milk and cheese are used. We  
should eat more green vegetables and  
fresh fruits, and drink plenty of water  
and milk. Eat three meals each day  
at regular hours.

To Ye Editor's way of thinking,  
cleanliness is of major importance.  
Have a bathroom and tub on the farm  
and use it often! Don't be like the  
farmer in the story who, on seeing the  
lovely bathroom in his hotel suite, ex-  
claimed, "My what a swell bathroom!  
Sure wish it was Saturday night so I  
could take a bath." Two baths a week  
should be a minimum. By rights, the  
farmer needs his daily plunge even  
more than his city brother, due to the  
nature of his work. Frequent baths  
will do much to insure a cheerful,  
happy family.

Plenty of sleep and a reasonable  
amount of rest are essentials to good  
health and happiness. We need to  
say "rest" to the farmer and farm  
housewife where we say "exercise" to  
city men and women. With proper  
management and efficient workman-  
ship when they are at it, there is no  
reason for the farmer working all day  
and half the night, except in special  
seasons. Sunday should be a day of  
rest and recreation. Many farmers  
work half-heartedly during the week,  
and then manage to put in a real day's  
work on Sunday.

Another thing this keep-at-it-all-the-  
time system does is to drive the young  
people from the farms to the city.  
A little application of the work-hard-  
and-then-play-some-principle will go a  
long way towards making farm life  
more attractive. During certain sea-  
sons it is necessary to work long  
hours, but that is not generally true.

Regularity of habits counts, but the  
farmer, due to the strenuous life he

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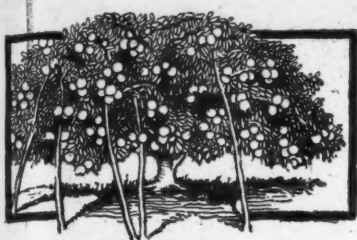
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## Beech-Nut Prepared Spaghetti

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leads, is more apt to keep regular eating and sleeping hours than is his city brother. Plenty of fresh air in the sleeping room is a point which often receives scant attention from farm families. A sleeping porch is very desirable, especially for boys.

Clothes are a bigger factor in health and happiness on the farm than is often admitted. Wearing torn, dirty, ill-fitting clothes not only adds discomfort, but causes loss of self-respect. The farmer needs neat, clean, comfortable shirts and overalls and well-fitting shoes. Nothing can cause more discomfort to the worker than worn-out, ill-shaped shoes.

The farm housewife can look just as nice in her clean, simple, well-made gingham as her city cousin in silks and satins, though in a different way.

## Recipes Using Raisins

**RAISINS** are truly the cook's friend—they add zest and flavor to countless everyday dishes and transform the commonplace bread, pudding or cookie into something highly desirable. Then besides, they are excellent eaten alone. How often does Mother ruefully survey the empty raisin box from which small hands (and sometimes large hands) have purloined the fruit! But raisins are good! They have a delightful flavor, and contain valuable mineral salts and easily digested fruit sugars. Because of the sugars, the nutritive value is high. Raisins are comparatively inexpensive.

### Rice and Raisins

$\frac{1}{2}$  c. rice  $\frac{1}{2}$  c. seeded raisins  
 $\frac{2}{3}$  c. boiling water Salt to taste  
Wash raisins. Pick over and wash rice. Place boiling water in upper portion of double boiler and put directly over heat. Add salt and raisins, then when boiling rapidly, add rice slowly and boil 5 minutes. Place upper into lower portion of double boiler and cook till tender. Serve with sugar and cream.

### Raisin Bread

When baking light bread, mix out several loaves of raisin bread. Take a portion of raised dough large enough for a loaf and roll out on the board. Cover surface with seedless raisins and roll up like a jelly roll. Pinch the edges and ends of the dough firmly together. Place loaves in greased pans, brush top with melted shortening and set aside in warm place till loaves are light. Bake in hot oven, which may be cooled down after bread begins to brown. Raisins added in this manner will not discolor the loaf and will be evenly distributed.

### Coffee Cake

1 c. butter 1 t. cinnamon  
2 c. sugar 1 t. cloves  
6 eggs 1 t. allspice  
1 c. black coffee 1 lb. raisins  
1 t. soda 1 lb. currants  
 $\frac{3}{4}$  c. flour  
Cream and butter sugar. Add thoroughly beaten eggs and coffee. Add dry ingredients, sifted together. Beat thoroughly. Stir in currants and raisins (seeded and cut). Bake in moderate oven.

### Hermits

5 T. butter 4 t. baking powder  
1 c. sugar 2 c. flour  
2 eggs 4 T. milk  
 $\frac{1}{2}$  t. cinnamon 8 walnuts, chopped  
 $\frac{1}{4}$  t. cloves  $\frac{1}{2}$  c. seeded raisins  
Cream butter and sugar, add milk and well-beaten eggs. Mix and sift flour, spices and baking powder. Add to first mixture and beat thoroughly. Add raisins and nuts and mix well. Drop from teaspoon on buttered baking sheet, 2 inches apart. Bake 20 minutes in moderate oven.

### Scotch Scones

2 c. flour  $\frac{1}{2}$  t. salt  
2 T. butter 2 to 3 c. milk, rich  
2 T. sugar 3 T. currants or raisins  
1 egg  
1 T. baking powder  
Sift dry ingredients, work in the shortening and add enough milk to mix to a soft dough, leaving the bowl clean. Toss on a floured board and roll or pat into a large round scone about  $\frac{3}{4}$  inch thick. Bake on a griddle, first on one side and then on other. The scone may be baked whole, or may be cut pie-fashion into triangular pieces and baked. If necessary, finish by propping up at the side of the griddle. Wrap in a napkin to keep warm. Serve hot, either plain or cut open, and spread with butter.

### Spanish Buns

$\frac{1}{2}$  c. sugar  $\frac{1}{2}$  c. nut meats  
 $\frac{1}{4}$  c. butter 2 t. cloves  
3 eggs 2 t. cinnamon  
1 t. soda  $\frac{2}{3}$  c. flour  
1 c. sour milk  $\frac{1}{2}$  c. raisins  
Sift soda, flour and spices together. Cream butter and add sugar gradually and floured nut meats and raisins. Add beaten eggs and milk. Stir in dry ingredients quickly. Bake in greased gem pans in moderate oven about 25 to 35 minutes.

### Hot Cross Buns

1 c. scalded milk  $\frac{1}{4}$  t. cinnamon  
 $\frac{1}{4}$  c. sugar 3 c. flour  
2 T. butter 1 egg  
 $\frac{1}{2}$  t. salt  $\frac{1}{4}$  c. raisins  
1 yeast cake  
Dissolve yeast cake in water and let become "active." Melt butter and combine all ingredients except flour. Add flour gradually, beating vigorously until no more flour can be beaten in. Add egg

The fact that she is busy and overworked is no excuse for uncombed hair, unlaced shoes and torn, soiled garments. She can work better if she takes time to look neat, because she will "feel better" mentally and physically. She can turn out more than enough work to make up for the time used on her personal appearance, and do it with less effort. Cheap, ill-fitting shoes are a mighty poor investment for the farm woman who must take thousands of steps in a day.

All these things—proper and comfortable clothes, a sufficiency of good food, plenty of sleep, regular hours, frequent baths, and time for recreation—and rest—make for the proper mental attitude. With a cheerful, go-getter attitude, work goes easy and more good things come your way.

well beaten. When thoroughly mixed add raisins. Cover and let rise over night. In the morning shape in the form of large biscuits, make a cross on top of each bun by cutting with a sharp knife or scissors, and place in pan one inch apart. Let rise and bake 20 minutes.

### Raisin Puff

$\frac{1}{2}$  c. butter  $\frac{2}{3}$  c. flour  
2 T. sugar 2 t. baking powder  
2 eggs  $\frac{1}{4}$  t. salt  
1 c. milk 1 c. raisins  
Cream butter, add sugar gradually and eggs well beaten; then add milk alternately with 2 c. flour, mixed and sifted with baking powder and salt. Seed and chop raisins, dredge with remaining flour, and add to mixture. Turn into a buttered mould, adjust cover, and steam  $1\frac{1}{2}$  hours. Remove to hot serving dish and serve with whipped cream, sweetened and flavored with grated nutmeg.

### Rhubarb and Raisin Pie

Line a plate with plain pie paste and fill with 2 c. rhubarb, cut in  $\frac{1}{4}$ -inch pieces. Sprinkle with 1 c. sugar and  $\frac{1}{2}$  c. raisins, seeded and cut in halves. Cover with crust and bake in moderate oven 45 minutes.

### Boston Cookies

1 c. butter  $\frac{1}{2}$  t. salt  
 $\frac{1}{2}$  c. sugar 1 t. cinnamon  
3 eggs 1 c. chopped nuts  
1 t. soda  $\frac{1}{2}$  c. raisins, chopped  
 $\frac{1}{4}$  T. hot water and seeded  
 $\frac{3}{4}$  c. flour  $\frac{1}{2}$  c. currants  
Cream the butter, add sugar gradually, and eggs well beaten. Add soda dissolved in hot water, and one-half the flour mixed and sifted with salt and cinnamon; then add nut meats, fruit and remaining flour. Drop by spoonfuls one inch apart on a buttered sheet, and bake in a moderate oven.

### Nut Spice Cake

$\frac{1}{2}$  c. butter  $\frac{1}{2}$  t. cloves  
1 c. brown sugar  $\frac{1}{4}$  t. nutmeg  
 $\frac{1}{2}$  c. molasses 1 c. raisins, chopped  
4 egg yolks  $\frac{1}{2}$  c. currants  
1 c. sour milk  $\frac{1}{2}$  c. walnuts, chopped  
 $\frac{2}{3}$  c. flour  $\frac{1}{2}$  c. flour  
1 t. soda  $\frac{1}{4}$  t. baking powder  
1 t. cinnamon  
Mix ingredients in the order given, first creaming butter and sugar, then adding molasses, egg yolks, milk, flour, soda and seasonings. This recipe makes two loaves.

### Gingerbread

$\frac{1}{4}$  c. butter  $\frac{1}{4}$  t. soda  
 $\frac{2}{3}$  c. boiling water  $\frac{1}{2}$  t. salt  
1 c. molasses 1 t. cinnamon  
1 egg 1 t. ginger  
 $\frac{2}{3}$  c. flour  $\frac{1}{4}$  t. cloves  
 $\frac{1}{2}$  c. raisins  
Melt butter in water, add molasses, egg well beaten, and dry ingredients mixed and sifted. Bake in a buttered shallow pan from 35 to 40 minutes, or in greased gem pans from 20 to 25 minutes. If baked in one large pan, cut in squares when done and serve while still warm.

### Fruit Rolls

2 c. flour  $\frac{3}{4}$  c. milk  
5 t. baking powder  $\frac{1}{2}$  c. stoned raisins  
 $\frac{1}{2}$  t. salt (finely chopped)  
1 T. sugar 2 T. citron, chopped  
2 T. butter  $\frac{1}{2}$  t. cinnamon  
Mix dry ingredients and sift twice. Work in lard with tips of fingers. Add gradually the liquid, mixing with knife to a soft dough. Roll to  $\frac{1}{4}$  inch thickness, brush over with melted butter, and sprinkle with fruit, sugar and cinnamon. Roll like jelly roll; cut off pieces  $\frac{3}{4}$  inch in thickness. Place in buttered tin and bake in hot oven 15 minutes. Currants may be used in place of raisins and citron.

### Abbreviations

1 c. equals 1 cupful.  
1 t. equals 1 teaspoonful.  
1 T. equals 1 tablespoonful.  
1 lb. equals 1 pound.

All measures are level.



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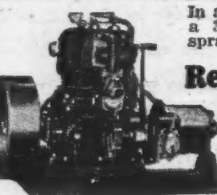
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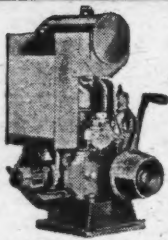
In addition to these two vertical motors, we now have a 3 H.P. horizontal engine that takes care of all sprayer requirements from 1½ to 4 H.P.

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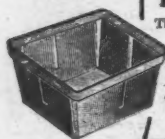
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### Fruit Growers' Conference at Lafayette, Ind.

A FRUIT growers' conference of special importance is to be held at Purdue University, Lafayette, Ind., January 12-16. The program includes consideration of some of the most outstanding problems of fruit growing, such as insect and disease problems; orchard nutrition with special reference to growth and fruitfulness; orchard soil problems; and the pruning of young and bearing trees.

The program will be in charge of the Departments of Horticulture, Botany, and Entomology of Purdue University. In addition to Indiana authorities, there will be present Dr. E. J. Kraus of Wisconsin and Dr. E. C.

Auchter of Maryland, who are authorities of national importance. There will be ample opportunity for discussion, and all present are invited to take part.

The Department of Horticulture at Purdue University extends a cordial invitation to all fruit growers, no matter from what state, to attend this important conference.

**THE PURDUE** (Indiana), fruit judging team, consisting of W. B. Yates, R. F. Hennis, D. A. Sherwood, O. J. Heacock and O. G. Anderson, recently won first prize in a contest held at Columbus, Ohio. The team judged and identified 60 plates of apples, making 11,118 points out of a possible 12,000.

## Beauty in the Bedroom

by Ruth Gordon McCarron

**MOST** people labor under the delusion that beauty and expense are co-partners. No matter how moderate your outlay for furniture and home decoration may be, you can have color and charming simplicity in your home. During the coming winter months your inside painting can be done cheaply with the best results.

More than one-third of the allotted time of our lives is spent in our bedrooms. Medical authorities stress the influence of our surroundings upon health and spirits. Everything in a bedroom should contribute to repose.

The careful housewife likes the bedrooms to look clean, feel clean, and be clean. A painted bedroom satisfies the inherent desire of all mankind for beauty and cleanliness combined.

### Solving Sanitation

Practically all housekeepers realize the value of paint in ridding a house of "undesirable visitors." The best regulated households suffer at times from the invasion of unwelcome vermin. Paint fills up the cracks and crevices where these pests make their appearance and find lodging. Painted surfaces are sanitary. A smooth, washable surface will not harbor disease germs. Every woman realizes that well-painted interiors make housekeeping less laborious—when she is through cleaning, the surfaces look clean, and she knows that her work has been well expended. At the same time, paint is the best decorative medium we have.

Let us consider the walls, ceiling and floor—the background of any room. Study the location of the room, bearing in mind that each room should express the personality of its occupant.

Sunny south and west rooms will stand colder color treatments, such as blues, grays, pale greens or yellows, than will north and east rooms. Into these we must bring warmth by using the richer colors, like pink, from its palest shade to its warmest rose, and deep yellows.

If the ceilings are high, carry the ceiling color down the walls, using your own judgment as to the depth needed to proportion your room. A molding or a painted line several shades darker than the color of the walls, or matching the wood trim is an effective treatment to separate the walls and ceiling.

If your ceilings are low, carry the wall color all the way up, using a molding for a finish at the angle of the walls and ceiling. Another way to give height to low rooms is to panel or stripe the walls perpendicularly.

The safest tint for bedroom ceilings is a warm ivory, never pure white. White is less likely to give that desired clean look and is hard on the eyes. Before painting, fill the cracks in the ceiling with plaster of paris, or a similar preparation.

### In My Lady's Chamber

In bedrooms facing the west there are probably some old pieces of mahogany or rosewood. Select a warm gray flat paint for the walls, ivory for the woodwork and French blue for the floor.

If your house has old-fashioned wide board floorings, hardened with years, you are fortunate. These floors lend themselves readily to paint. Remember always the old rule to have the floors dark, the walls lighter, and the ceilings lightest.

Hangings of French blue and rugs of burnt orange and gray bring finishing touches to a room of this kind.

A northeast bedroom needs a totally different treatment. Rose pink walls will supply warmth in a background for soft, ivory furniture and woodwork. Ordinary unbleached muslin, stenciled with oil paints, makes washable hangings. The designs on the curtains may be repeated on the furniture, using mulberry, old rose and French blue, with touches of green and yellow for the color scheme.

A big southwest room used for a nursery offers charming possibilities. In this room, where smudgy little fingers leave their tracks, good results can be secured by finishing the lower part of the walls to a suitable height in gloss paint which can be washed and rewashed, or economically repainted before the upper walls begin to show wear. Paint the upper walls a soft yellow; the lower part and woodwork a warm cream; the floor a very dark brown. One section of the lower portion may be finished as a blackboard. A special paint is made for this purpose.

The range of stencils for children's rooms is practically limitless. Animals, flowers and all the characters of nursery rhymes are at your disposal. Apart from the charm they lend the nursery, their educational value is worthy of consideration.

Nursery furniture that may be washed frequently is another benefit paint brings us. Several good enamels come in a delightful shade of leaf green and one quart will give every piece of furniture in the room two good coats, over the first coat of ordinary paint. The stencils used on the walls should be repeated on the furniture. If these are developed in primary colors, red, blue, yellow, and one secondary color, green, the effect will be charming. Washable rugs of burnt orange and white might be used on the dark brown floor.

### The Difficult Room

Somewhere in the house you may have a small, poorly lighted bedroom. Most people have. Paint the walls cream, a few shades darker than the ceiling, the woodwork ivory, and the floor old blue. When the floor is dry, varnish thoroughly. Use only the most necessary pieces of furniture and enamel these black, stenciled, preferably with figures of small design. This room will stand touches of red for a color note.

The wall effects in the different rooms may be varied by employing any of the several new two or three-tone finishes which have become so popular. These are obtained by using two or more shades of the same color, or of contrasting, harmonizing colors. When the first coat is dry, the second is applied and rolled while wet with a large sheet of newspaper, crumpled into an elongated wad. Different effects are produced by using a coarse cloth or a sponge instead of the paper. These finishes have the added virtue of hiding cracks or chipped spaces.

When the bedrooms are shut off from each other, it gives us the opportunity to consider each room independently. If the house is small, or the rooms connected with each other, it is safer to use one general color scheme throughout the rooms on the same floor.

### Painted Furniture

A word about painted furniture. It is economical. Up in the attic you may have several pieces of good shape that simply will not fraternize with each other because the woods are different. Paint them. They may not be "brothers under the skin" but they will get on together famously for all that. It is practically impossible, if directions are followed carefully, to make mistakes. Painted furniture is beautiful. It is more than that, it is long-wearing and sanitary.

There is one delightful development in it that many people overlook. Paint the insides of the drawers in vivid contrast with the outside. A flat paint is better than enamel. Every time you pull open a drawer you will experience the same thrill of delight. Can you imagine a French blue or a Chinese red lining in the drawers of gray or ivory furniture? It is also worthy of note that if you paint the inside of the drawer in which you keep linens, blue, you will not have to wrap them in any blue material to preserve their whiteness.



## The Young Dewberry, a New Hybrid Variety

(Continued from page 9)

tween the Logan blackberry and the Superlative raspberry was made by Laxton Brothers at Bedford about 1907. It is reported as separating from the receptacle like the raspberry



Figure 4—The Young dewberry trained to a stake

but not readily, so that the fruit mashes and crumbles when picked. In the eastern United States, what is supposed to be the Laxtonberry behaves precisely in this manner though the fruit is very large and of superior flavor.

## Missouri Growers Hold Meeting

THE MISSOURI State Horticultural Society held one of its usual interesting and valuable conventions at Kansas City on December 2-3. The meetings and exhibits were staged together in one of the large rooms of the Coates House. Thus, an excellent atmosphere was provided for the convention.

Plans for the Central States Horticultural Exposition, to be held at Kansas City next year, were explained by Prof. T. J. Talbert, University of Missouri. In addition, there were valuable talks on Grape Growing, by Prof. F. W. Faurot, Mountain Grove; on Pruning the Apple, by Prof. B. S. Pickett, Ames, Ia.; on Cedar Rust, by Prof. T. J. Talbert; on San Jose Scale Control, by Prof. L. Hase-man, Missouri College of Agriculture; on Apple Aphid and Its Control, by Prof. C. R. Phipps, Mountain Grove; on Fruit Packages, by A. C. Hughes, St. Louis; and on Better Marketing of Missouri Fruits, by C. B. Michelson, Frisco Railroad. Louis Erb of Cedar Gap outlined a proposed plan for a marketing organization for Missouri fruits. Among other things, he emphasized the importance of lower freight rates. L. W. Cushman of Webb City described the summer tour and outlined the plans for next summer's tour. C. E. Durst of Chicago spoke briefly on the so-called child labor amendment with reference to its effect on agriculture and horticulture, after which a resolution was unanimously passed disapproving of the amendment in its present form.

There was a good fruit and supply exhibit. Of particular interest was the exhibit of the apple breeding work of the Mountain Grove Experiment Station. Prof. Faurot had on exhibition a number of promising varieties which were obtained from crosses between Ingram and Red De-

licious. These differed in form, size and color, showing quite clearly that the parents are impure from an hereditary standpoint. Also several promising sorts were on exhibition which were obtained from self-pollinated Ingrams; out of 31 seedlings thus obtained, four appear to be promising. Several promising types from crosses between other varieties were also on exhibition.

The former officers were re-elected, as follows: Dr. E. L. Beal, Republic, president; B. R. Coleman and S. S. Connett, vice, presidents; Patterson Bain, McBaine, secretary; E. O. Buck, Waverly, treasurer; and G. F. Jordan, St. Louis, assistant secretary.

## Reader's View of the Child Labor Amendment

I HAVE been a subscriber to the AMERICAN FRUIT GROWER MAGAZINE for a great many years, and have appreciated it as a very useful and necessary magazine for the fruit grower and agriculturist in general. I have quite a large farm and orchard and have received great profit from reading your paper.

I am writing you now, though, not on horticulture or agriculture, but on a matter that vitally affects anyone interested in rural matters; namely, your article in the November issue on the child labor amendment. That editorial is one that should be in the hands of every farmer. The fact of it is, it ought to be before every good citizen. I do not know of any matter before the public that is of more vital importance than that amendment, and the great danger is that it will be let pass through the legislatures by default. It seems to me that every agricultural journal should take up the cudgel and fight that measure. It is a most iniquitous proposition, forwarded, doubtless, by well meaning, though theoretical people, who do not realize how the farmer may be caused to suffer by the loss of the help of his children in farm work. It may be said there is no danger in this, but there is danger. The very people who would father such a measure will be ready to propagate its enforcement to the letter.

I would be glad to see you have an editorial in every issue of your magazine on this subject, and arouse the farming interests to the danger with which they are menaced. — Langston Bacon, Missouri.

## Coming Fruit Grower Meetings

January 7-8, 1925: Annual meeting Massachusetts Fruit Growers' Association, Worcester, Mass. R. A. Van Meter, secretary, Amherst.

January 8-10: Annual conventions American Fruit and Vegetable Shippers' Association and American Fruit and Vegetable Brokers' Association, Congress Hotel, Chicago, Ill.

January 14-16: Annual meeting New York State Horticultural Society, Rochester, N. Y. Roy P. McPherson, secretary, Schenectady.

January 14-16: Annual meeting Wisconsin State Horticultural Society, Madison, Wis. F. Cranefield, secretary, Madison.

January 19-23: Horticultural Show, Missouri State Horticultural Society and Student Horticultural Club co-operating. College of Agriculture, Columbia, Mo. Patterson Bain, Jr., secretary, Columbia.

February 2-6: Farmers' Week, Ohio State University, Columbus, Ohio. Ohio State Apple Show to be held during Farmers' Week; also annual meeting of Ohio State Horticultural Society, February 24. F. H. Beach, secretary, Columbus.

THE MOST important undertaking in connection with any co-operative organization is to sell the entire crop produced by the membership at the best prices that can be obtained, and at the least possible cost of administration. — Ralph P. Merritt, General Manager, Sun-Maid Raisin Growers.

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THINK OF WHAT IS BACK OF IT



## Inspected Products Are Favored Abroad

FOREIGN markets are tending to favor American products that have been officially inspected at shipping points, according to advices received by the United States Department of Agriculture.

Sales of American apples in Liverpool are made by samples, and buyers declare they have found that the Federal-State inspected apples can be relied upon to be of uniform quality and condition, and that the samples can be depended upon to be indicative of the quality and condition of the entire shipments.

Liverpool buyers state that in many instances the quality of fruit in non-inspected shipments has a wide range, and that purchasers by samples of such shipments are always subject to discount on account of the element of uncertainty.

## Oregon College Has Unique Exhibit

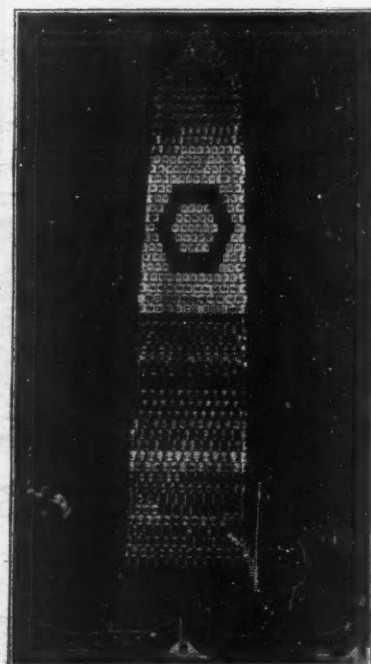
by John C. Burtner

THREE thousand cans of Oregon fruit and vegetables built into a replica of the Washington monument formed the central display at the annual student horticultural show held recently at the Oregon Agricultural College.

The show has been held with growing success for nine years by the students and faculty of the Department of Horticulture at the college. Many persons have pronounced it the largest and most comprehensive display held at any college in the United States.

Beauty and educational value are emphasized by the four divisions of horticulture, which put on elaborate

exhibits of pomology, floriculture, vegetable gardening, and horticultural products. Exhibits this year included 200 varieties of pears, world cham-



Replica of Washington monument built out of canned fruit

pion celery, sub-tropical fruits, and a working demonstration of canning methods and vinegar generation.

As soon as you have read this issue of the American Fruit Grower Magazine, please pass it on to your neighbor.



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Florida's Most Attractive Resort

**HOTEL ROYAL PALM**

The Garden Spot of the West Coast  
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**SEND NO MONEY.** Just write for seeds today on credit when sold remit the \$3.40 you collect and Telescope is yours. No extra money or postage to pay when you deal with us.

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No. 2283—Attractive Dress.

You can make this dress in either silk or wool, and it would be smart for general or business wear. Cut in sizes 36, 38, 40, 42, 44 and 46 inches bust measure. Size 36 requires 3 1/2 yards 40-inch material with 1/2 yard 32-inch contrasting.

No. 2210—Smart Daytime Style.

The pattern cuts in sizes 16 years, 36, 38, 40 and 42 inches bust measure. Size 36 requires 3 3/4 yards 36-inch material with 1/2 yard 32-inch contrasting.

No. 1983—One-piece Dress.

The accompanying diagram will convince you how easy this dress is to make. Cut in sizes 16 years, 36, 38, 40 and 42 inches bust measure. Size 36 requires 3 yards 42-inch material with 2 1/2 yards 6-inch ribbon.

No. 1981—Slenderizing Dress.

This becoming dress will make the full figured woman look 20 pounds slimmer. Cut in sizes 16 years, 36, 38, 40, 42, 44, 46, 48 and 50 inches bust measure. Size 36 requires 3 3/4 yards 40-inch material with 1/2 yard 20-inch contrasting.

No. 2276—Attractive One-piece Dress.

Cut in sizes 16 years, 36, 38, 40, 42 and 44 inches bust measure. Size 36 requires 2 3/4 yards 42-inch material with 1 1/2 yards 36-inch contrasting.

ORDER BLANK FOR PATTERNS—Price 10 cents each.

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Enclosed find.....cents for which send me the following:

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## Illinois Sectional Societies Meet

THE ILLINOIS State Horticultural Society, in addition to having an annual meeting for the state as a whole, is divided into three sectional societies, each of which has a meeting previous to the time of the state meeting.

### Southern Society Meeting

The Southern Illinois Horticultural Society held its annual meeting at Carbondale, November 25-26. There was an attendance of about 150, and excellent interest was shown throughout.

Instead of filling up the program with addresses, as is so commonly done, the officers devoted most of the sessions to one subject each, which was handled by an able party. This gave the speakers opportunity to go into their subjects thoroughly, and there was plenty of time for discussion. The plan proved successful, and everyone was well satisfied with results.

The principal talks were by R. A. Simpson of Vincennes, Ind., on Changes in Ideas and Practice; Dr. H. W. Anderson of the University of Illinois on Bacterial Shot-Hole of the Peach; Dr. J. W. Lloyd of the University of Illinois on Observations on Pacific Coast Marketing Methods; and Prof. W. S. Brock of the University of Illinois on Recent Work on Dusting Peaches.

The former officers were re-elected as follows: J. W. Stanton, Richview, president; Guy Beauman, Tunnel Hill, first vice-president; John A. Gage, Texico, second vice-president; L. M. Smith, Ozark, third vice-president; and S. Alden Perrine, Centralia, secretary-treasurer.

### Central Society Meeting

The Central Illinois Horticultural Society met at Quincy, November 13-14. Due to bad weather, the attendance was somewhat small. The topics of interest to fruit growers were as follows: Flowers and Shrubs for the Home, by J. B. Burrows of Decatur; Uniform Honest Pack and What It Means on the Market, by H. W. Day of the Illinois Department of Agriculture; and Modern Orchard Practices, by Prof. W. S. Brock of the University of Illinois.

The following officers were elected: Dr. J. R. Lambert, Quincy, president; Willis A. Seward, Quincy, vice-president; C. S. Oglevee, Lincoln, secretary; and C. G. Winn, Griggsville, treasurer.

### Northern Society Meeting

The Northern Illinois Horticultural Society held its annual meeting at Galena, the home of General Grant, on November 9-10. The attendance was fairly good and the interest was excellent. A fruit exhibit was held in connection with the annual exhibit of the Jo Daviess county growers.

A program of varied subjects was handled by Dr. A. S. Colby of the University of Illinois; Charles Klehm of Arlington Heights; H. C. Christensen of Oshkosh, Wis.; J. L. Hartwell of Dixon; W. Soverhill of Tiskilwa; Mrs. Will Stephenson of Galena; Dr. H. W. Anderson of the University of Illinois; and C. E. Durst of Chicago. A motion was passed disapproving the so-called child labor amendment.

L. R. Bryant of Princeton was re-elected president, and R. A. Green of Ottawa and L. H. Cutler of East Dubuque were re-elected secretary and treasurer respectively.

Sambo and George, two colored boys, could not read, write, or tell the time of day. Sambo bought himself a brand new Higersoll watch. George, knowing that Sambo could not tell the time, thought he would have a little fun at Sambo's expense. Said George: "Sambo, what time is it?"

Sambo, not wishing to expose his ignorance, took the watch out of his pocket, held it in the palm of his hand and holding it out to George, said: "Dar she am."

"Damn if she ain't," replied George.



# BETTER HOME DEPARTMENT

Edited by E. W. Lehmann

## It Pays to Plan

IT HAS been well said that "houses are not built for a day, nor for a year, but for a lifetime." The glaring mistakes of a poorly planned house always result in dissatisfaction, waste of time, and usually additional expense. Since this is true, every house builder and everyone who expects to remodel his home can spend many hours profitably in planning. There is no better time for this than during the long winter evenings. During the winter days many changes may be easily made in old houses that will add greatly to the comfort and convenience.

### Determine the Needs of Family

The first step in planning a house is to determine the needs of the individual family. When a house is being built for a home, every member of the family should be considered, their needs, their tastes, and their ideas. The house should also be planned for its particular location and setting; this is especially true of the farm home. The location of outside doors and the position of certain rooms is often determined by the position of the out-buildings making up the farmstead.

### Many Building Helps Available

There are many sources from which every prospective builder can secure helpful ideas. Suggestive plans may be secured from many of the state colleges, also from commercial concerns, and many ideas appear in publications. For best results it is always desirable to make a collection of materials sometime before the house is built; then a plan may be made without too great a rush.

Another source of help in house planning is to visit well-planned homes and make note of details, such as the stairway, the closets, windows, relation between rooms, etc. It is a mistake to duplicate a house because it seems on first thought to be the very house wanted. Take time to study it, think about it, and live in it in thought. Before you start building, be sure it will fit into your particular picture, will meet the needs of the entire family individually, and will make the home you have wanted.

### Consider Outside Appearance

Don't neglect the outside appearance of your home; often the services of the architect are needed most in making the house attractive. A house may be made attractive or it may be made ugly by the use of the same building material. The house builder must not forget that just as the artist can produce a beautiful view with the ordinary common colors of clay, so can the architect produce a picture that is good to look at out of common brick, mortar, and other building materials. We often think too much of the utility and not enough of the beautiful.

### Give Consideration to Equipment

A home is not well-planned if due consideration is not given to the installation and arrangement of the water and lighting fixtures. This is just as true of the house that is being remodeled as the house just being built. Piping for water and wiring for electric lights can be more easily put in where wanted and more economically installed when the house is being built than at some later time. Proper attention to piping and wiring must also be given in remodeling an old house.

if the electric connection is not to be made immediately, or if the water system is not to be installed at once, it is a mistake not to install the pipe and have all wiring done while the house is under construction or repair.

### An Example of Lack of Planning

At the request of a farm advisor, a home was visited for the purpose of assisting in the locating of the plumbing and wiring as the house was being remodeled. On arriving it was found that the remodeling was practically complete, the plastering was done, the floors were laid and the wood trim was in place, but the sad part of it was that no provision had been made for either wiring or plumbing. It was necessary to tear up the new floor in several places, and to cut holes through the walls and ceiling to install the pipes and electric wire, which resulted in unnecessary expense for the additional work and a poor looking job on account of pipes being exposed that should have been concealed in the wall.

Another mistake in this particular job was that the bathroom was located at one corner of the house directly over a porch that is exposed. The location was such that it will be necessary to pass through a bedroom to get to the bathroom. The bathroom in this house could have been placed more advantageously at the head of the stairs directly over the kitchen, where it could have been reached from any room without going through another room.

### Get Advice While Planning

The condition on this farm is mentioned because the same mistakes are repeated in many other homes that are being remodeled or built. If you expect to call in someone for advice or assistance, do it before your work begins so that costly mistakes may be avoided. It is never a good plan to turn a job over to a contractor before a carefully worked out plan is made. To build or remodel a house without a plan is like travelling to a distant town on unmarked roads with a poor sense of direction.

## Get Acquainted With Machinery

DURING the winter months is a good time to get acquainted with the farm machinery and equipment. The more we know about our machines, the more efficiently they will be handled, the less trouble will be encountered, and the more pleasure we can obtain out of farm life.

Start with the tractor and automobile; they are similar in a good many respects. Get the instruction book and study the motor; note how it operates, how the carburetor works, how the gas is ignited, how the mechanism is lubricated, why some parts need more and a better grade of oil than others. Study the troubles of the motor, and the causes. After the motor and its accessories are thoroughly understood, go to the transmission, then the wheels. On the automobile, find out all you can about tire repairing.

Other machines can be studied in the same way, the lighting system, the water pump, the spraying machine, and the farm implements. They can not only be studied with the idea of using them more efficiently, but so that repairs and adjustments may be made without outside assistance.



## NEIGHBORS

When Ephraim Crosby made a clearing far out on Valley Road and built his house, he had no neighbors. He lived an independent life, producing on the farm practically all that his family ate and wore. Emergencies—sickness and fire and protection of his homestead from prowlers—he met for himself. Later he had neighbors, one five and another eight miles away. Sometimes he helped them with their planting and harvesting, and they helped him in turn. Produce was marketed in the town, twenty miles along the cart-road.

Today Ephraim Crosby's grandchildren still live in the homestead, farming its many acres. The next house is a good mile away. But the Crosbys of today are not isolated. They neighbor with a nation. They buy and sell in the far city as well as in the county-seat. They have at their call the assistance and services of men in Chicago or New York, as well as men on the next farm.

Stretching from the Crosbys' farm living-room are telephone wires that lead to every part of the nation. Though they live in the distant countryside, the Crosbys enjoy the benefits of national telephone service as wholly as does the city dweller. The plan and organization of the Bell System has extended the facilities of the telephone to all types of people. By producing a telephone service superior to any in the world at a cost within the reach of all to pay, the Bell System has made America a nation of neighbors.



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In the repair of any machine, whether it be replacing a broken or worn part or making an adjustment, one of the greatest needs is confidence. Confidence may be acquired by a little careful study and by experience, and experience may be a costly teacher without study.

## The Cranberry Industry

THE CRANBERRY industry, growing from a few acres in 1820, when the first attempts were made to cultivate it, has grown to the present acreage of nearly 30,000. It is essentially an American industry. With the exception of about 100 acres in Nova Scotia, the annual crop of about 500,000 barrels is all produced in the United States. About one-half of the acreage is in Massachusetts, where the crop was first grown. New Jersey and Wisconsin follow. There are about 500 acres in Washington and 100 in Oregon.

Cranberries have been tried in Norway, the Netherlands and Denmark, but with little success. The cranberry was first cultivated on Cape Cod, at North Dennis, Mass., between 1810 and 1820. The attempt was not very successful, however, and it was not until about 1850 that the crop was produced successfully. By that time it was found that cranberries could be grown only on certain soils, that

the use of sand increased the crop, and that flooding protected the vines from winter injury. After 1850, the number of growers and the acreage increased rapidly. The first plantings in New Jersey were made about 1845; on Long Island about 1865; in Wisconsin about 1874; and in Oregon about 1885.

The acreage has steadily increased in recent years, except during and since the World War. The varieties now grown are much superior to the wild, mixed vines used in the early days. Better methods of controlling insects and diseases are now known. Improved machinery and tools have assisted greatly. Weed control has been improved, and the crop is practically all being marketed co-operatively.

Most cranberry fields show losses in some years and profits in others, yet over a period of years plantations average a fair return on the investment. The total acreage in the United States produced a crop valued at \$220 per acre in 1920; \$261 in 1921; and \$228 per acre in 1922.

"Do you think you can manage on my salary of twenty dollars a week, darling?" he asked, after she had accepted him.

"I think I can," she replied, "but what will you do?"



## Strawberries! Fresh from the Vine!

Umm!

### Don't they Sound Good!

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## Principles and Practices in Small Fruit Culture

Edited by A. S. Colby

### Selection of Small Fruit Plants

EARLY winter is the best time to place the order for small fruit nursery stock. After the decision is made to grow small fruits, no time should be lost in getting started. Orders for nursery stock are given better attention by nurserymen if received early in the season. At that time nurserymen are not so rushed, and their stocks of plants are more nearly complete, necessitating less substitution. If the nursery stock cannot be sent at once because of climatic conditions, the order will go through early in the spring before the rush season arrives.

#### Study the Catalogs

The first step is to write for the catalogs of nurseries listing small fruit plants. Then, with a pretty definite idea of the kinds and varieties wanted, plenty of time should be taken to study the catalogs carefully and check over the varieties offered. There is considerable improvement possible in some catalogs with respect to this item. As a rule, too many varieties are listed, consisting mostly of the old standard ones which have been propagated and sold for many years. The Snyder blackberry and Downing gooseberry, for example, are commonly listed as standard varieties. Newer varieties, like the Eldorado blackberry and Poorman gooseberry, which have proven their worth quite generally, should be substituted.

#### From the Nurseryman's Standpoint

It is true that the nurseryman grows the old standard varieties because they are called for; it does not pay him to produce a large amount of stock of comparatively new varieties if it is to be left on his hands. Most nurserymen with whom we have talked in our small fruit varietal improvement work are very anxious to co-operate with us at the Illinois Experiment Station and grow such quality varieties as we recommend, provided there will be a sale for the stock. One of the functions of the State Experiment Station is to test out new small fruit varieties and determine their value. Growers should call for new varieties which are desired, if they are not listed in the catalogs. In a short time all good nurseries will list valuable new varieties in response to public demand.

At the present time many nurseries sell such a small amount of small fruit stock in comparison with other kinds that they do not think it pays to grow it themselves. Consequently, when an order is received for such stock, it is filled through the use of material bought from some other nursery, or from some firm which contracts to do that sort of work. This practice is very unfortunate in that one of two things is likely to happen. The stock may be untrue to name because of misplaced labels, or the plants may be in poor condition, either from molding or drying out, when finally received by the purchaser.

#### Where to Buy

The writer recommends, therefore, that prospective small fruit growers either buy from a large nursery which grows or controls the growing of its own small fruit stock, or from a smaller one which specializes in small fruit plants. It does not matter so much in just what part of the country the nursery is located. As a matter of fact, many nurseries have farms in other states where propagation of certain kinds and varieties is carried on to better advantage than in the home nursery.

It is, however, extremely important that true-to-name, vigorous, disease-free stock be secured. State nursery inspectors and workers in federal and state experiment stations are co-operating with the best nurserymen in the small fruit business to make these things possible. Much of the raspberry stock, for example, sent out in the past has carried serious diseases, such as crown gall, bramble streak, leaf curl and mosaic. Unsuspecting purchasers have planted such stock and cared for it, with the result that in a very few years they have found their plantations badly diseased and unproductive. Small fruit authorities have then advised them to pull out and destroy their plants. With the co-operation of interested parties, it will be possible in a few years to secure clean stock of recommended varieties, which, when planted on clean soil and given proper care, will bring back the small fruit industry into its own, with a fair profit for growers.

#### Not How Cheap but How Good

In buying quality small fruit stock, the price should be a minor consideration. A difference of a fraction of a cent on a raspberry plant or a few cents on a grape vine one way or another is of small importance considering that the cheaper price often goes with a cheaper grade. The purchaser cannot afford to buy the cheaper grade at any price. Of course, there are some exceptions to this rule, such as occur when a nursery has on hand a large surplus of a given variety, but, on the average, the small fruit grower, just like everybody else, gets just what he pays for.

#### Helps in Choosing Varieties

Some nurseries are assisting the prospective purchaser by using carefully worked out descriptions which accompany the fruit lists. This, of course, adds to the expense of making the catalog, but we believe this very much worth while as a protection to the buyer and as a means of insuring continued good will. Where the Niagara grape, for example, is listed as a quality variety, a note should be added that it has quality only when allowed to become fully ripe before picking and that the vine often winter-kills if planted too far north.

In making out a planting list, it is advisable to secure all available information from successful small fruit growers as to the performance of certain small fruit varieties in one's own locality. Soils and climatic conditions vary from section to section; therefore it is manifestly impossible to recommend a list of any fruits which would be adapted to all sections of the country.

#### Suggestive Variety List of Small Fruits

Subject to these differences in climate and soil, as well as to the personal preferences of the grower, the following list includes quality varieties of small fruits recommended for general planting:

**Blackberries:** Eldorado.  
**Raspberries:** Red—Cuthbert, King, Latham. Black—Cumberland. Purple—Royal.  
**Currants:** Perfection, Wilder, White Grape.  
**Gooseberries:** Poorman, Oregon Champion.  
**Strawberries:** Klondike, Premier, Gibson, Dunlap, Burrill, Gandy, Aroma, Champion Everbearing.

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### NEW Cortland Apple

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## MILLIONS OF STRAWBERRY PLANTS \$2.50 per 1,000

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Our Plants grown by exclusive methods in ideal virgin soil. Sturdiness and heavy yield certain. Strong, heavy root thrive under severest conditions. Take no risk. Every Plant GUARANTEED to Live and Grow. Be sure of results. Profit by our 51 years' experience satisfying berry growers.

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Grapes: White—Diamond for north-  
ern sections; Niagara. Red—Brighton,  
Caco, Salem, Agawam. Black—Eclipse,  
Worden, Hubbard, Wilder; for com-  
mercial use, Moore's Early and Con-  
cord.

### New Zealand Fruit Industry

THE TOTAL area in orchards in New Zealand in 1923 has been estimated by the New Zealand Ministry of Agriculture at 30,000 acres. Nearly 150,000 cases of apples were exported during the 1923 export season, and of these, 102,200 cases were shipped to Great Britain, 40,963 to South America, and 4512 to Honolulu, these figures constituting a record quantity for exports from the Dominion in any one year. It is anticipated that the total export of fruit from New Zealand during the present season will be over 200,000 cases.

The major part of the fruit shipped to South American markets last season was sold at a loss. In order to prevent a recurrence of such losses this year, growers have established an advisory committee which is attempting to co-ordinate shipments to South America and to extend other channels of trade. Moreover, the Government has granted a guarantee of two cents per pound net return on all shipments of apples during the 1924 and 1925 seasons, the guarantee being restricted to a maximum of 250,000 cases.—*Crops and Markets.*

### Pruning as a Factor in Fruit Growing

(Continued from page 4)

tive growth is sufficient to shade the fruit and retard its development. Moreover, restricting the height of the tree so that all work is done from a six-foot ladder materially reduces the fruiting area and the possible tonnage of best quality fruit.

Figure 4 shows another system by which deciduous tree fruits are pruned in California. This method is of very



Figure 4—Bartlett, pear tree typically "short" pruned. Note severe thinning and heading back. Only three or four buds have been left on each one-year-old shoot

general application and consists essentially in a heavy thinning, accompanied by the removal of all but three or four buds on the shoots which are headed—an example of the so-called "short pruning."

Certain growers have worked out for their own conditions quite satisfactory systems of training and pruning which are distinct departures from the ordinary methods.

#### The Sims System

Figure 5 shows a mature peach tree pruned by the "Sims system." The relatively few upright main scaffold branches clothed with long, slender fruiting twigs are characteristic of this system. The upright scaffolds



Figure 5—Mature peach tree pruned by the Sims system. Note heavy framework branches. Fruit is produced on long pendant "hangers." By this unusual method much fruit is produced on spurs. Trees after reaching a certain height (12 to 16 feet) are never allowed to grow taller

are able to hold a heavy load of fruit with the minimum of bracing. The rather narrow spread of trees thus pruned is perhaps an unwarranted restriction of the fruiting area.

#### The Caldwell System

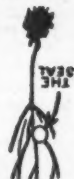
One of the most interesting departures from standard pruning practice

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is the so-called "Caldwell system" of pear pruning (Figure 6). Briefly stated, this system consists in the tying down of the upright one-year-old shoots at an angle somewhat below the horizontal. The resultant new growth arises just below and back of the highest point of the bend. Practically all growth beyond this point is reproductive in character and rapidly develops a good fruit-spur system. In principle the Caldwell plan is very similar to the espalier-trained trees of European countries. In both cases the bending of the branches seems to induce fruitfulness.

At each dormant period all the new shoots are tied down in such a way that there is as little shading as possible of the lower branches. This later tying is done to any convenient point on either trunk or branch. At 10 years of age, few pear orchards attain the size and productiveness of Mr. Caldwell's, whose trees, with the exception of the first winter, have not been touched with the pruning shears.

Briefly, the advantages claimed for the method are: Large trees of good mechanical strength, combined with a large fruiting area close to the ground, are secured in a comparatively short period of years; they come into bearing from two to four years earlier than

nage of high quality fruit?" The growth of new wood is probably the only index by which the grower can judge whether or not future yields are being sacrificed for the sake of one or two heavy crops. On the other hand, the production of too great an amount of vegetative growth will reduce the yields far below the maximum which can profitably be maintained.

#### Practical Suggestions

1. The total amount of new growth the tree makes, taking into consideration the crop produced and the conditions under which grown, is the best criterion by which to judge whether or not the pruning has been of the proper severity. (a) If the resultant new growth is longer than seems desirable for a tree of the kind and conditions under which it is grown, then the previous pruning was too severe. (b) If the new growth has been inadequate, the cutting was too light and a heavier pruning program should be adopted, except in those cases where sparse growth has resulted from non-availability of carbohydrates.

2. The pruning should include adequate thinning out of the fruiting shoots, and this should be followed, where necessary, by a thorough thinning of the fruit.

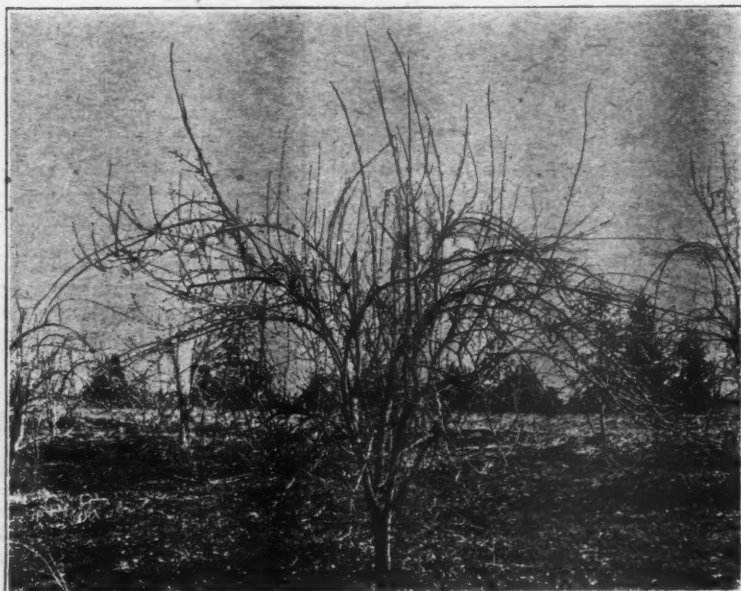


Figure 6—Caldwell system of pear pruning. Six-year-old Bartlett pear tree which has been trained by tying down new shoots each year. Note new branches which arise at bend. These will in turn be tied down to a position a little below the horizontal.

trees which are trained by severe cutting back; they can be trained to a more shapely form in a windy section where prevailing winds hinder symmetrical development; and finally, they produce larger crops of comparable quality.

The chief disadvantage is that this system, to be successful, must be part of a comprehensive and intensive orcharding program. Since all wood is conserved, special care must be exercised to see that adequate moisture and fertility are present in order to secure an abundance of new wood and at the same time carry large crops through to maturity and to supply the enormous leaf area which is being increased from year to year. In most soils some renewal pruning will undoubtedly be necessary as soon as the trees begin bearing heavily in order to replace the fruiting wood which has outlived its usefulness and to maintain a proper condition of vegetative vigor. Success depends very largely upon the skill and judgment of the individual. The method is probably applicable only to pears and should only be adopted with a full understanding of its requirements and limitations.

#### Quality and Yield the Important Factors

In adopting any pruning system, the first and most important question to be asked is: "Will this method insure the annual production of a good ton-

3. The tree should be thinned out sufficiently to admit an adequate light supply.

4. All interfering branches, dead wood, and diseased parts should be removed.

5. The larger limbs should be spaced far enough apart throughout their length so that they will have ample room to develop the desired fruiting branches and spurs.

6. The trees may be kept from becoming too high by continuously cutting back the tallest branches to strong outward growing laterals.

7. All branches should be cut off close to the limb from which they arise, leaving no stubs.

8. It is impossible to secure an ideal shape, height and distribution of fruiting wood unless the trees are spaced far enough apart when planted to enable them to develop normally. There has been a decided tendency among fruit growers in many places to plant trees too close together for normal development.

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## Profitable Poultry



Edited by H. A. Bittenbender

## Common Losses in Poultry Flock

IN LAST month's issue we considered several important diseases of poultry. Besides those described, there are a number of others. These will receive consideration in this and succeeding issues.

### Intestinal Worms

A number of the flocks in Iowa have been found to be seriously infested with parasitic worms. Under favorable conditions, these parasites multiply so rapidly that epidemics may occur among both old and young birds. Non-production, lack of growth, and even death results. Worms exist in largest numbers where poultry is overcrowded.

**Symptoms:** Birds infested with intestinal worms become weak and thin, and yet may have a good appetite and retain a healthy appearance for some time. They finally become dull and listless.

**Post Mortem:** On opening up birds that die, or on killing a weak, thin bird, the intestines and caeca should be cut open and the contents mixed with water in a dark pan. Worms, if present, can be detected, as they are white and thread-like.

**Cause:** There are three kinds of worms of importance. The large, round worm (*Ascaridia perspicillum*) is from one to four and a half inches in length when full grown. The tapeworm (*Davainea tetragona*) is long, flat, and segmented. Both these worms are found in the intestinal tract, where they usually cause inflammation. The caecum worm is found in the blind guts that lead from the intestine into the vent. This worm is from three-tenths to one-half inch in length and is round. A few are found in nearly every bird.

**Transmission:** The infestation is spread by either the worms or eggs being taken into the bird with food and water. The eggs are very resistant and may retain their vitality for as long as a year. It is believed that the tapeworms require another animal, such as a snail, earthworm, or slug, for partial development.

**Control:** The method of treatment of a flock is as follows:

1. Use fresh ground for raising chicks. Remove or plow up the ground around houses and sow down.
2. Fill up mud-holes and improve drainage about buildings.
3. The following mixture is suggested: Santonin 2½ grains, Calomel 2½ grains, Aloin 2½ grains and Arecanut 10 grains. This can either be fed in a dry mash, moistened with some liquid, or can be fed in capsules to individual birds. For flock treatment, feed in a moistened mash. One or two treatments is all that should be necessary. Do not feed more than TWO GRAINS of mixture to each individual bird. Capsules can be made up by a druggist. A tonic can be made by mixing 12 quarts of mash with one pound epsom salts to one pound dry powdered sulphur. Give all that they will clean up in 10 to 15 minutes every day for three or four feedings.

### Fowl Cholera

Fowl cholera is a highly infectious and usually rapidly fatal disease. It causes death in a large percentage of cases within three days after the symptoms of the disease appear. In the Middle West, farm poultry has sustained heavy losses in both old and

young birds, due to its presence in the flock.

**Symptoms:** Some birds show no external symptoms, but drop dead without visible sickness. Others develop a less acute form and may be seen walking slowly around the yard, often crouching, with ruffled feathers, in the corners away from other birds. They eat little, but drink a great deal. Their droppings are usually yellow or bright green in color and the presence of diarrhea is common. When close to death, extreme weakness comes over the birds. They stretch their heads and necks forward or from side to side; the head falls forward, mucus oozes from the mouth, and the eyes close.

**Post Mortem Symptoms:** Upon opening and examining the dead bird, one finds a congestion of blood vessels in the liver, kidneys, mesenteries and intestines. The lining of the intestine next to the gizzard is reddened and bleeding. The heart has the appearance of having numerous needle punctures from which the blood oozes. The liver is enlarged, soft, full of blood and often green. The final proof of the presence of the disease in any case is the finding of the organism. In case of heavy loss, a veterinarian should be consulted.

**Cause:** The disease is caused by one of the smallest disease-producing organisms, known as *Bacillus Avisepticus*. The organism is not highly resistant, being made harmless in a short time by direct light. It appears to be killed by a weak germicide.

Fowl cholera is fundamentally a blood disease, although micro-organisms may be found in nearly all the organs of the diseased birds. The causative organism is often found in apparently healthy birds. If, for any reason, the vitality of one of these birds is lowered, these germs increase and soon kill the bird and start an epidemic.

**Transmission:** The disease spreads within the flock through the droppings, which are full of germs; through the liquid droppings from the mouths of infected birds getting onto the food and into the drinking water; or from fowls eating dead, infected birds.

**Control:** Treatment of sick birds is not practical. On finding sick or dead birds, proceed immediately as follows:

1. Place dead birds temporarily out of reach of other birds.
2. Make sure the trouble is fowl cholera and then kill all sick birds by dislocating their necks.
3. Burn with oil or bury at least three feet deep all dead bodies and all yellow and green excreta that can be gathered.
4. Place one 7.3-grain mercury bichloride tablet in a gallon of drinking water in a non-metal container, or use one 30-grain sodium sulphocarbonate tablet per gallon water. These tablets are used only when the disease is present and then never more than 10 days at a time.

### Tuberculosis

Tuberculosis is found in a large percentage of the farm flocks. It has become one of the most common diseases of poultry. In nearly 50 per cent of the flocks visited by extension poultry specialists during the last few years, tubercular specimens were found.

**Symptoms:** A sickly-looking head is characteristic. Lameness is a com-

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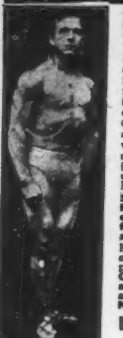
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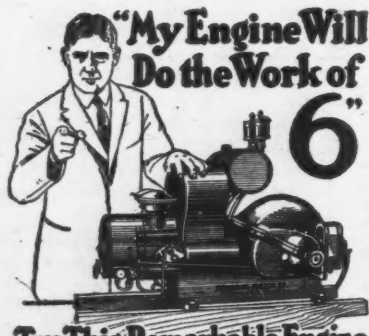
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mon symptom. The appetite of the birds remains good, but usually there is a gradual loss of flesh, especially on the breast bone. The bird grows weak finally and is unable to move around. Diarrhea is often present in the last stages.

**Post Mortem Symptoms:** On opening the bird after it is dead, the liver is found to be spotted, covered with circular, yellowish, rather hard, granular nodules. The spleen and digestive tract, as well as other parts of the body, many times have these nodules.

**Cause:** Tuberculosis is caused by a bacterium (*Bacillus tuberculosis avian*). This organism is generally considered to be a variety of the same species which causes tuberculosis in man, cattle and hogs. The presence of the disease should therefore not be disregarded from a general hygienic standpoint. The avian bacillus is very resistant to external conditions. Heat and direct sunlight readily kill it, but ordinary disinfectants act rather slowly on it.

**Transmission:** The main source of the spread of the disease is the sick fowl. The droppings from the infected bird contaminate the roosting and feeding quarters and the premises in general. Healthy birds within the flock soon become diseased, especially where unsanitary conditions exist.

**Control:** Tuberculosis can be eliminated only by disposing of the infected stock. Treatment is impractical and of no value in the control of the disease. To eradicate the disease:

1. Replace the entire stock as soon as possible with healthy birds raised on uninfected ground.
2. Kill and burn all birds showing symptoms of tuberculosis.
3. Put dropping boards in poultry houses and keep them clean.
4. Get plenty of fresh air and light into the poultry house.
5. Get rid of old fowls.
6. Burn and bury deep all dead birds.
7. Plow up and sow down land when practical.

### Diphtheritic Roup

Diphtheritic roup may be a very serious trouble in the flock. It occurs often in connection with chicken pox and contagious roup and by some authorities is believed to be caused by the same organism. It is one of the hardest diseases to eradicate, as individual treatment is usually necessary, unless the whole flock is sacrificed.

**Symptoms:** This disease may be distinguished from the nasal roup by the formation of false membranes on the mucous surface of the mouth, throat, nostrils, eyes, or air passages. These membranes may remain small and disappear in a few days or grow thicker and become firmly attached. Often these thick, false membranes fill up the nasal passages, throat and bronchial tubes, causing the bird to die from suffocation. When slightly affected, birds stand with neck extended, their beak open to facilitate the entrance of air, and give off a characteristic disagreeable odor. After three or four days, swallowing becomes difficult, the head is swollen, the eyes nearly close, and the comb becomes cold and pale.

**Cause:** The exact cause is not known.

**Transmission:** The birds may be infected by food, drinking water, or litter which has become contaminated by secretions from the mouths of diseased birds. Infection may be introduced into a flock by the purchase of an infected bird, or on the feet of humans or wild animals.

**Control:** It pays to treat only birds that are slightly diseased or that are valuable. It is better to kill affected birds by wringing their necks. Burn all carcasses and disinfect poultry houses and the surrounding ground. Use one 7.3 grain mercury bichloride tablet per gallon of drinking water in a non-metal container. These are not used more than 10 days at a time. Also feed in wet mash every other day

as much of the following mixture as the birds will eat up in 10 or 15 minutes: One part epsom salts, one part dry powdered sulphur to 12 parts dry mash.

**Treatment:** Individual birds may sometimes be cured by removing the false membranes with a sharp knife and applying tincture of iodine to these parts. The ointment made up of petroleum jelly, iodoform and menthol crystals recommended for Contagious Roup (described in the December issue) should be applied also.

## Renovation of Worn-Out Orchards

(Continued from page 8)

for insects, fungi, and vermin; and in these ways prevents tree growth and weakens vitality. The country over, it is not too much to say that grass kills more trees than any other agent.

The sod-mulch specialist may grow good trees, and in some situations sod must be maintained, but the man who keeps his trees in sod because it is cheapest to do so usually has an orchard that needs renovating. In such cases there is a choice between two methods. The decrepit orchard in sod may be restored to vigor by using nitrogen liberally as a fertilizer and by making a mulch of cut grass about the trees; or, the owner may break up the sod and cultivate.

### Cultivation

Of all means at the command of fruit growers to stimulate the recuperative power in trees, old or young, cultivation is greatest. Every other agency is insignificant in comparison. The effects of plowing and cultivating worn-out orchards are often miraculous, made manifest almost immediately by a more luxuriant growth and greener, livelier color in the leaves. Nor is it strange that cultivation is almost a panacea for orchard ills when its triple functions of regulating moisture, making plant food available, and improving the physical condition of land are brought to mind. The reasons for tilling are, or should be, fundamental knowledge to every fruit grower and cannot be discussed here.

### Fertilizers May Renovate Worn-Out Orchards

From experiments and experience in several states, it is now common knowledge that good orchard soils, well drained, well tilled, and well supplied with humus from cover crops, seldom need commercial fertilizers. But in light sands and gravels, in soils subject to drought, in soils so shallow as to limit the root-range, and in sodded orchard, fertilizers act as a tonic and often give worn-out trees a new start in life. It is always, however, good practice to look to drainage, tillage, and health before applying less-certain fertilizers. Nitrogen is the sovereign fertilizer for orchard lands. It is seldom that the trees need any other fertilizer, although the orchard cover-crop may. None of our orchard plants seem to need lime.

### Pruning

Pruning may be made to give recuperative power in all worn-out orchards and is indispensable in the rejuvenation of old trees. The older and more nearly worn-out the tree, the more vigorous the pruning must be. Sometimes it suffices to thin out surplus branches when the tops are very thick, but in most decrepit trees branches must be cut back as well. Usually, especially in old trees, this heading back should be severe, cutting off as much as one-third or one-half of the entire length of most of the branches. Some pomologists recommend cutting back to mere stubs—the dehorning of a few years ago, a practice now happily on the wane. The details of pruning worn-out trees must be left to discussions of the whole subject of pruning.

### Orchard Sanitation

Nearly all worn-out orchards should have a general cleaning up as the first step in renovation. This should be

thorough but it is not profitable to putter over the job in the way of white-washing trunks, scraping off moss, lichens, and loose bark. The trees can be thoroughly cleaned by pruning and spraying. Cankers and blight must be cut out. Spraying will rid the trees of insects, fungi, and other parasites. It goes without saying that the owner of every orchard planted for profit must put into practice an up-to-date system of spraying.

### Will It Pay to Renovate a Run-Down Orchard?

It requires rare good judgment to tell whether old or run-down trees are worth trying to save. Old trees of the several stone fruits, or those badly out of health, are rarely worth trying to renovate. Much can often be done with young plantations of these fruits, or with trees a little "off color." It is a little more hopeful with the pear, and most apple trees, sound in trunk and branch, old or young, can be restored to profitable vigor and health. In any case, much depends upon the variety, the location, and the man. Amazing recoveries are sometimes made by trees that at first sight seem hopeless invalids. Often vigor is restored in a single season. Success is seldom so soon attained, however, and the owner must decide whether it will pay to lose two, three or more years in bringing trees to a state of productiveness or to cut them down and plant anew.

## Kansas Horticulturists Meet

THE FIFTY-EIGHTH annual convention of the Kansas State Horticultural Society was held at the State Capital at Topeka December 2-4. While there was no competitive fruit exhibit, there were many educational exhibits. Each fruit exhibit of merit received a prize.

A program of unusual merit was provided by the able and popular secretary, O. F. Whitney. Subjects of importance to fruit growers were: Culinary Qualities of Different Varieties of Apples, by Mrs. A. F. Baker, Baldwin; Apple Production Experiments, by Prof. L. C. Williams, Kansas Agricultural College; Experience of an Orchard Inspector, by A. M. Walker, Pittsburg; Spraying Demonstrations in the Arkansas Valley in 1924, by Prof. W. R. Martin, Jr., Kansas Agricultural College; Apple Production in the Arkansas Ozarks, by W. F. D. Batjer, Fayetteville; Why the Winners Win, by Prof. W. F. Pickett, Kansas Agricultural College; Fruit Growing in Central Kansas, by Schuyler C. Stevens, Smith Center; Relation Between Orchard Practices and Apple Grades, by G. A. Flinger, Manhattan; Cold Storage, by James N. Farley, Hutchinson; Cover Crops for Kansas Orchards, by Prof. R. J. Barnett, Kansas Agricultural College; Progress in the Control of Orchard Insects, by Prof. E. G. Kelly, Kansas Agricultural College; and a general talk on insects by Dr. H. B. Hungerford, Kansas University. C. E. Durst of Chicago talked on marketing fruits and vegetables and on the root stock question.

The banquet proved thoroughly enjoyable and was presided over by James N. Farley. Excellent toasts were given by F. W. Dixon of Holton, Mrs. James Sharpe of Council Grove, and Mrs. G. W. Kinkead of Troy. Miss Agnes Husband, dean of women at Kansas University, explained how the university was doing its part in educating the young women of Kansas.

George W. Kinkead of Troy was elected president, following James Sharpe. T. P. VanDrsold of Silver Lake was elected vice-president, to succeed George W. Kinkead. James Farley of Hutchinson was elected treasurer, to succeed F. W. Dixon. O. F. Whitney of Topeka was re-elected secretary.

A MILLIONAIRE, comfortably aware that he has more clothes than he knows what to do with, will go shabby without the least embarrassment.



## Classified Advertising

15¢ a word, set uniform style. Count each initial, abbreviation, number or group of numbers as one word. Write advertisement on separate sheet. Cash must accompany order.

Terms close 15th of month.

### FARMS AND ORCHARDS

**CALIFORNIA STATE LAND BOARD HAS** a number of desirable irrigated farms of twenty and forty acres in San Joaquin Valley for sale to bona fide farmers on 36½ years' time. Complete irrigation system. Price per acre varies according to location. Five per cent of purchase price payable when deal is made; remainder in semi-annual installments extending over period of 36½ years with 5 per cent interest annually. Your opportunity to acquire a farm in winterless California. All deciduous fruits profitably grown; alfalfa is a paying crop. Ideal conditions for stock and poultry. Good schools and unsurpassed fruit associations market your crops. Resolving your marketing problems. You can farm all year in California. Splendid opportunities here for the man of moderate means. State Board's pamphlet, also Santa Fe illustrated folder describing San Joaquin Valley, mailed free on request. C. L. Seagraves, General Colonization Agent, Santa Fe Ry., 942 Railway Exchange, Chicago.

**NORTH GEORGIA BARGAIN, 495 ACRES 55** miles north of Atlanta, ideal for apple orchard. Elevation 1500 feet, partly cleared, fertile soil, near railroad, mountain creek that will produce electric power; four dwellings. A place to really enjoy the present and scientific methods of farming directly with owner. Write for free circular. B. S. Crane, Winder, Ga.

**FREE SERVICE—IF YOU WANT TO BUY OR** exchange for farm or business, send details. Hundreds of owners will write you direct. No commission charged. Farm Service Bureau, St. Louis, Mo.

**ORCHARD AND IDEAL SUMMER HOME, AD-** joining the famous Bedford Springs Hotel. Illustrated folder. Rush C. Litzinger, Bedford, Pa.

**3-ACRE FARM PLANTED WITH 5000 PEACH** and apple trees with necessary buildings and equipment located in Eastern Pennsylvania. Post Office Box 316, Reading, Pa.

**WANTED—TO HEAR FROM OWNER OF LAND** for sale. K. Hawley, Baldwin, Wis.

### HELP WANTED—MALE

**EARN \$110 TO \$250 MONTHLY, EXPENSES** paid as Railway Traffic Inspector. Position guaranteed after completion of 3 months' home study course or money refunded. Excellent opportunities. Write for Free Booklet G-100. Stand. Business Training Inst., Buffalo, N. Y.

**U. S. GOVERNMENT POSITIONS—MEN-** women, 18 up. \$95.00-\$192 month. Steady. Paid vacation. Candidates coached. Common education sufficient. List positions—free. Write immediately. Today sure. Franklin Institute, Dept. W-97, Rochester, N. Y.

**ALL MEN, WOMEN, BOYS, GIRLS, 17 TO 65,** willing to accept Government Positions, \$117-\$200, traveling or stationary, write Mr. Osment, 25, St. Louis, Mo., immediately.

**EARN \$25 WEEKLY, SPARE TIME, WRITING** for newspapers, magazines. Experience unnecessary. Copyright book free. Press Syndicate, 978, St. Louis, Mo.

**ORCHARDIST WANTED—FIRST-CLASS MAN,** with family—who knows culture and general care of orchards—good proposition for right man. Address Wm. J. Duncan, Bowling Green, Mo.

### PATENTS AND TRADE-MARKS

**PATENT-SENSE—AS ONE OF THE OLDEST** patent firms in America we give inventors at lowest consistent charge, a service noted for results, evidenced by many well-known patents of extraordinary value. Book, Patent-Sense, free. Lacey & Lacey, 738 F Street, Washington, D. C. Estab. 1869.

**"PATENT PARTICULARS" AND ADVICE ON** trade-marks, free. Write. Sterling Buck, W-229F, Washington, D. C.

### DOGS—PET STOCK

**THE WORLD'S LARGEST DOG KENNELS—** Offer for sale: Orange watch dogs, automobile dogs, children's companions, farm dogs, stock drivers, hunters and retrievers. Also Big Game Hounds, Coochounds, Foxhounds, Rabbit Hounds and thoroughbred hound and Alredale puppies. Satisfaction and safe delivery guaranteed to any point in the United States. Large illustrated descriptive catalog, mailed free. Orange Kennels, Box 123, La Rue, Ohio.

**HUNTING HOUNDS, FEEDS, MEDICINES, SUP-** plies. Catalogue. Dog Journal, Herrick, Ills.

### NURSERY

**YOUR GARDEN IMPROVES WITH THESE** good things to eat. Columbian, tasteful Raspberry, dozen plants, dollar; three dozen, two dollars. Bliss, highest quality Strawberry, dozen, dollar; three dozen, two dollars. Washington, beautiful asparagus, hundred, dollar; thousand, eight dollars. Postpaid. Circular free. Certified Plant Farm, Macedon, N. Y.

**ALFRED BLACKBERRIES ARE THE LARGEST** grown. Berries, 1½ inches long, 3 inches around, coreless and sweet. Catalog FREE with actual photographs of this wonderful berry. Also 10 varieties of strawberries including Champion everbearing. Write Michigan Nursery, New Buffalo, Mich., B. 1.

**FRUIT TREES, GREATLY REDUCED PRICES,** direct to planters in small or large lots by express, freight or parcel post. Free 68-page catalog. Peaches, apples, plums, pears, cherries, grapes, nuts, berries, pecans, vines. Ornamental trees, vines and shrubs. Tennessee Nursery Co., Box 101, Cleveland, Tenn.

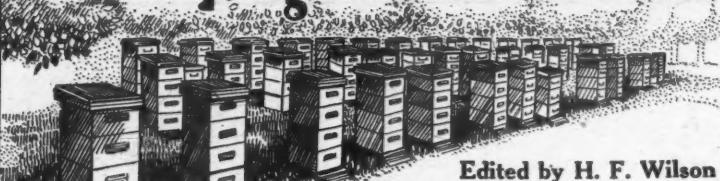
**ELBERTS, WILEYS, BRACKETTS, GA. BELLES,** 20,000 one-year-olds. Per thousand, 2 to 3 feet, \$50.00, 3 to 4 feet, \$60.00. State inspected, vigorous trees. E. Brakesfield, Shiloh, Georgia.

**MILLIONS STRAWBERRY PLANTS, \$2.95 PER** 1000. Raspberries, grapes, bulbs, flower seeds. Chicks. Illustrated catalog free. Mayer's Plant Nursery, Box 62, Merrill, Mich.

**FOR SALE—CHOICE GRAPE VINES, STRONG** two year (4 Concord, 2 Niagara, 2 Woodruff) or 12 one year Concord, \$1. Prepaid. Briarcrest Nurseries, Mt. Carmel, Ill.

**FRUIT TREES, SMALL FRUIT, THE BEST** money can buy, direct from grower to planter wholesale. Sample apples. Bowling, Madison, O.

## Bee Keeping for Fruit Growers



Edited by H. F. Wilson

### Winter Bee Keeping

**DURING** the long winter evenings of January and February do not forget that you have plans to make for next season's work with the bees.

Start in by looking through the old bee journals to see if you have overlooked any new development of the past season. Go over the results of your season's work and see if you can make any improvements for the next season. Do not wait until the beginning of the honey flow to provide supers, sections, and foundation. The majority of beekeepers do not have sufficient equipment to produce a maximum crop of honey, and great quantities of honey are lost each year because of improper use of equipment.

**Have Sufficient Equipment on Hand** Let us see what is meant by proper equipment for any given number of colonies. This is a question upon which there is a difference of opinion, but the experience of many beekeepers is that it is a paying proposition to have on hand more equipment than is likely to be needed.

The least number of hive bodies one should have is four for each colony run for extracted honey, and two full bodies and four comb honey supers for each colony-run for comb or section honey. Two full depth bodies should be used on each colony for brood rearing in the spring, and if bees are to be wintered out-of-doors, they may be wintered in one or two hive bodies at the discretion of the beekeeper.

In case some colonies need more than the average number of supers, there will be a sufficient number not used on weak colonies to help out the stronger ones.

#### Prepare for the Honey Flow

First, go over all old equipment and nail down the loose pieces. Then carefully examine all old combs and discard those that are uneven or broken, as well as those having too much drone comb. Then buy and put together as many new frames as are likely to be needed and put in full sheets of foundation. When putting in the foundation, be careful to see that it is strongly fastened at the top, and that the cross wires are well embedded.

If you are producing comb honey, put your sections together and put in the foundation. In the use of section foundation, it is much better to use pieces that extend the full length of the section, rather than a single piece at the top, or two pieces, one at the top and one at the bottom. These pieces must be put in carefully and must be well fastened at the top and bottom or else they will break loose in handling and cause imperfect sections. After the sections are fastened in the super, paint the top of them with a thin coating of paraffin, which should be scraped off when the sections are being prepared for market. This will keep the sections free of propolis stains and dirt spots.

Cleaning up the queen excluders, honey boards, and bee escapes should also be done at this time, making the spring work more easy and much less of a task.

Also melt up all the old combs and cappings and send in the wax to a dealer where you can get cash or foundation in return. If you have any combs with pollen or honey in them, put them aside to be used in the spring. Combs containing moist, unfermented pollen are as valuable in

the spring as are combs of honey. Having everything ready will permit giving more time to manipulations of the bees and general care of the apiary.

#### Give Some Thought to Marketing.

After these matters are all taken care of, it will pay to give some thought to marketing the crop. A salesman can always sell honey at a fair profit, but for the average person to whom selling is difficult, a well planned selling campaign laid out ahead of time is always advisable.

Order your pails, glass jars, and labels early. Get together a few short stories on honey and bees, which your local paper will be glad to print for you if you ask the editor. These should be printed just about the time you are ready to market the crop. Use a few good honey posters as you will find local grocers far more willing to handle your honey if you can provide them with an advertising poster.

#### Cost of Production

And now last, but not least, figure out very carefully the cost of production. Include the total cost of equipment, with depreciation, the cost of bees, and your labor and time for putting up and selling the crop.

After compiling these figures, you can determine the price at which you can afford to sell the crop to get a fair return.

### Cull Apples and Pruning

(Continued from page 26.)

appreciable improvement in growth can result, pruning has no beneficial effect. It is not the pruning as an operation that helps—it is the change in the growth conditions.

How much growth is needed for the best fruit production is a question for another time. Really the best answer is merely this—that which gives the best apples. This is the best answer because the tree tells, and it is each man's own trees in which he is interested. See where the best apples are borne. Make the whole tree and all the trees grow like the wood where the best apples hang.

With the disappearance of the culls, much thinning of fruit is made unnecessary. This and the better fruit secured much over-balance the cost of pruning.

Proper care produces good wood which bears good apples.

### Apple Wipers Prove Satisfactory

**APPLE** wiping machines, installed this summer in four Washington packing plants, have proved entirely satisfactory, according to the Big Y Bulletin.

The use of wipers makes it impossible to bruise the fruit during the dumping process. The apples are elevated to the sizing machine from the wiper.

The machines wipe all the dust and spray from the apples and make work easier for the sorters, thereby saving good fruit and insuring the taking out of all culls. The wiped fruit gives a better appearance to the boxes after packing, thus adding to the appearance of the product.

Before buying an Orchard or Farm read the Classified Advertisements in the American Fruit Grower Magazine.

## Classified Advertising

### AGENTS WANTED

**EXCEPTIONAL OPPORTUNITY FOR A CAPA-** ble salesman to sell a high-grade, widely endorsed article. Used in homes, business buildings, schools, hospitals, churches, etc. Sales constantly expanding. A wonderful selling competition. Exclusive territory. Very liberal commission on every sale. Write fully. Dept. F, Prairie Metal Craftsmen, Eureka, Ill.

**\$300.00 A MONTH TO DISTRIBUTE EVERY-** day household necessity in rural and small town districts. No money needed. Million dollar firm behind it. Write for particulars and state territory desired. A. A. Johnson, 611 W. Lake, Chicago.

**AGENTS—HERE'S THE BEST LINE OF FOOD** flavors, perfumes, soaps, toilet preparations, etc., ever offered. No capital needed. Complete outfits furnished free to workers. Write today for full particulars. American Products Co., 2200 American Building, Cincinnati, Ohio.

**WE PAY \$200 MONTHLY SALARY, FURNISH** car and expenses. To introduce our guaranteed poultry and stock powders. Bigler Company, X-328, Springfield, Illinois.

**WE PAY \$50 A WEEK AND EXPENSES AND** give a Ford Auto to men to introduce poultry and stock compounds. Imperial Co., D-20, Parsons, Kan.

**FREE BOOK. START LITTLE MAIL ORDER** business. Pier, 804 Cortland St., N. Y.

### MISCELLANEOUS

**EARN \$20 WEEKLY, HOME, ADDRESSING,** mailing music, circulars. Send 10c for music. Information. A. F. Ryback Association, Oak Park, Ill.

**FREE BOOK—ELIJAH COMING BEFORE** Christ. Megiddo Association, Rochester, N. Y.

**POSTAL CARD WILL BRING CIRCULARS OF** the Twin Coal Oil Gas Burner. Write G. H. Poe Burner Company, Kenton, Ohio.

### TOBACCO

**TOBACCO—THREE YEAR-OLD LEAF, 8 LBS.** Chewing, \$2.00; 8 smoking, \$2.20; 8 Second smoking, \$1.40. Pay for tobacco and postage when received. Old Homespun Co., Hawesville, Ky.

### EDUCATIONAL

**RAILROAD POSTAL CLERKS, START \$133** month, railroad pass. Send stamp for instructions. Columbus Institute, V-33, Columbus, Ohio.

### STAMPS AND COINS

**OLD MONEY WANTED—WILL PAY FIFTY** dollars for nickel of 1913 with Liberty head (no Buffalo). We pay cash premiums for all rare coins. Send 4c for large Coin Circular. May mean much profit to you. Numismatic Bank, Dept. 546, Ft. Worth, Tex.

**CASH PAID FOR GRANDFATHER'S OLD LET-** ters with stamps on. Look in your attic, keep letters, send envelopes to Carl Krug, 2718 Woodburn, Cincinnati, Ohio.

### BERRY BOXES

**BERRY BOXES IN THE FLAT, MAKE THEM** up now and save time in the spring. Write for catalog. The Central Basket Co., Berrien Springs, Mich.

### HELP WANTED—FEMALE

**GIRLS—WOMEN, 18 UP—LEARN GOWN MAK-** ing at home. Earn \$25.00 week. Learn while earning. Sample lessons free. Write immediately. Franklin Institute, Dept. W-547, Rochester, N. Y.

### FOR SALE—EXCHANGE

**HARDWOOD ASHES IMPROVE ORCHARDS,** lawns, flower gardens, pastures, meadows, wheat, corn, etc. Free circular. Agents wanted. George Stevens Peterborough, Ontario.

### POSITION WANTED

**HAVE HAD MANY YEARS' EXPERIENCE,** foreman, superintendent, assistant manager, large apple orchards. Want position manager large apple or combination tree fruit proposition. References furnished and required. State acreage, age, equipment including buildings, location in reply. Address: H-15, American Fruit Grower Magazine.

## Boys

### Here's Your Chance!

We are giving away hundreds of these knives to ambitious boys everywhere, and you, too, can have one with your own name and address neatly imprinted under the transparent handle. Knife is exactly the size of illustration. It is a two blade knife, and the blades, hardened and tempered by the most scientific process, are of the finest steel and as sharp as a razor. You have always wanted a REAL knife, here's your chance to get one. All you need to do to obtain this knife is to secure four subscriptions to the AMERICAN FRUIT GROWER MAGAZINE. Easy, isn't it? Why won't you earn the knife in no time if you get busy!

Subscription Rates  
One year, \$5.00; Three years, \$15.00

**American Fruit Grower Magazine**  
53 W. Jackson Blvd. Chicago





*Y*OU'LL be relieved of a lot of worry and uncertainty when you see the home possibilities at the Majestic Hotel.

Big comfortable suites, overlooking Central Park, quickly accessible to business, shopping and theatre districts,—

And every facility for the entertainment of your friends as well as your own convenience and pleasure. Super restaurant service.

*Copeland Townsend*

## **Majestic Hotel** *and* **RESTAURANTS**

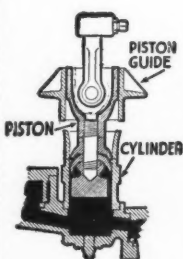
**Two West 72nd Street**

*Entire Block Fronting Central Park*

**New York**

*Telephone Endicott 1900*





**Pump Without  
Stuffing Boxes**  
Originated by Bean in  
**1884**

The Bean Pump has no stuffing boxes, hence no stuffing box troubles.

**Porcelain-lined  
Spray Pump Cylinders**  
Originated by Bean in  
**1888**

Bean porcelain-lined cylinders practically never wear out. Resist wear and chemical action.



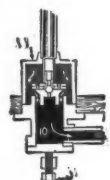
**Ball Valve with  
Removable Seat**  
Originated by Bean in  
**1899**

—and in 1909 we added the threadless cover and threadless reversible seat, which ended valve troubles forever.



**Eccentrics and  
Direct Gear Drive**  
Originated by Bean in  
**1908**

Eccentrics are much more satisfactory than cranks. Direct gear drive insures full use of all power.



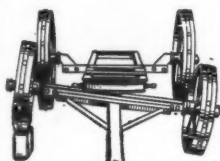
**Underneath Suction  
& Removable Strainer**  
Originated by Bean in  
**1910**

Liquid flows to the pump by gravity. Strainer easily cleaned and tank completely emptied in a few seconds.



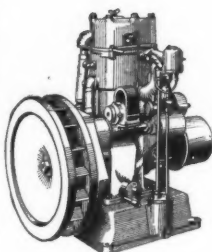
**Bean Pressure  
Regulator**  
Originated by Bean in  
**1911**

Safe and certain. Enables you to remove any valve in two minutes without stopping the engine.



**Rocking Bolster  
and I-Beam  
Steel Frame**  
Originated by Bean in  
**1912**

Steel frames combine ruggedness and long life. Rocking bolster insures easy handling on rough ground.

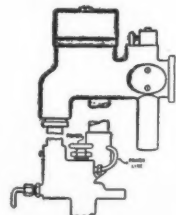


**Light-weight 6 to 15  
H. P. Engines**  
Originated by Bean in  
**1920**

Bean outfits were the first equipped with dependable engines of these larger horse powers.

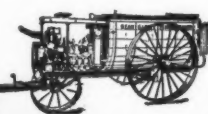
**Radiator-cooled  
Engines**  
Originated by Bean in  
**1921**

Bean 4 and 6 H. P. Engines, radiator cooled, built especially for sprayer use.



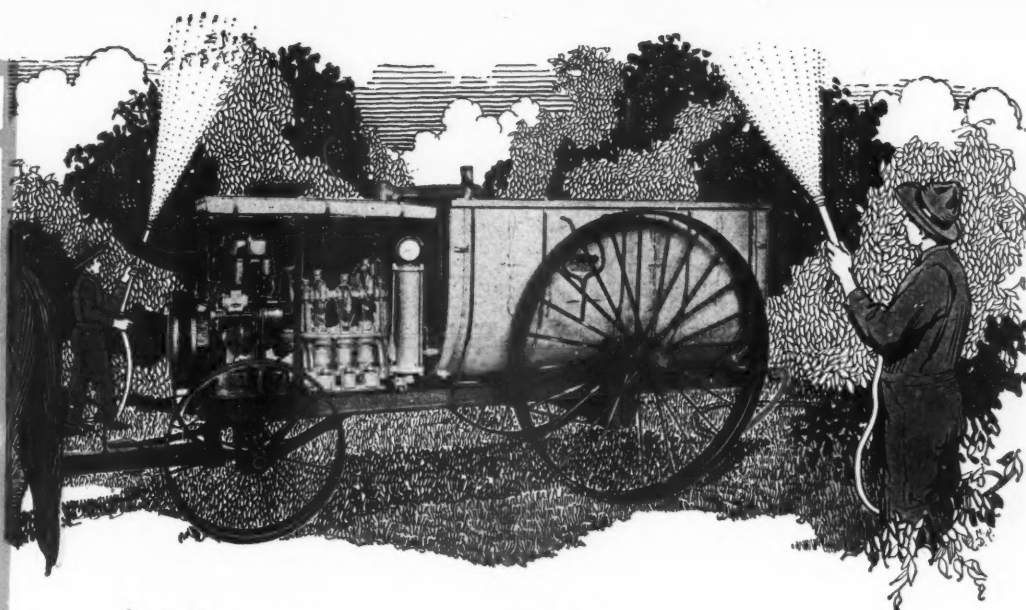
**Suction-feed Air-  
lift Carburetor**  
Originated by Bean in  
**1925**

Makes starting easier. Eliminates fuel pump troubles and the disadvantages of gravity feed.



**Bean Power Sprayer**  
The last word in  
sprayers  
**Today**

The result of 40 years of experience. When you buy a Bean you buy the best in spraying equipment.



## 40 Years of Experience and What They Mean to You!

The first high pressure spray pump with an air chamber was made and used by Mr. John Bean, founder of this business, in his Santa Clara Valley, California, orchard in 1884. That simple hand pump was a big advance step over the ineffective little squirt guns previously used and was the beginning of modern spray methods and today's highly efficient spraying equipment.

### 40 Years of Progress

From that day to this Bean has *pioneered the way* in the improvement of spraying outfits, and has made possible the wonderful achievements of recent years in the all-important field of pest control.

Practically all of the vital and fundamental improvements in sprayer construction have been *originated by Bean*. Some of them are illustrated at the left. Any grower familiar with spraying equipment knows what these various features mean. And we have not told half the story on this page.

### These Features Are Vital

Porcelain-lined cylinders that never wear out—the pump without a stuffing-box or stuffing-box troubles—trouble-less ball valves with easily removable cover and reversible seat—underneath suction and removable strainer—the Bean pressure regulator which is certain and safe and enables you to take out any valve in the pump in two minutes without stopping the engine or losing the pressure—the rocking bolster and sturdy I-beam steel frame—the long-wearing eccentrics instead of cranks—light-weight 6 to 15 h. p. engines—the

1925 looks like a big year for the grower. But the best markets and the best prices will go to the grower who produces the cleanest and best fruit. Quality pays. And quality is the result of thoro spraying. A good spray outfit means more to you this season than it has meant in years. Sign and send coupon for complete Bean Catalog.

**Complete factories at Lansing, Michigan, and San Jose, California, distributors in all large fruit districts, and dealers everywhere insure prompt delivery and good service.**

Bean radiator-cooled engine—the suction-feed air-lift carburetor—these and many other features considered essential by the grower were developed by Bean.

### 1925 Outfits Far in Lead

Some of the earlier Bean patents have expired and the features covered by them have been generally adopted by manufacturers of spray outfits. But Bean has steadily maintained the leadership established many years ago. There has been constant betterment and refinement in design and construction. New features have been developed, proven, and adopted so that the simple, rugged, dependable Bean Sprayers for 1925 are still far in the lead. During these 40 years sprayers have come and sprayers have gone, leaving owners without service or repairs, but the Bean owner has always had and today enjoys the best of service, and quick and easy access to parts and repairs regardless of the age of his outfit.

### Sprayers to Fit All Conditions

No matter what you may require in this way of high-grade equipment to apply insecticides and fungicides wet or dry, there is a Bean outfit that exactly meets your conditions.

We build all sizes of hand and barrel pumps—also a full line of power outfits ranging from the matchless Super-Giant, with a capacity of 17 to 23 gallons a minute at high pressure, down to the popular little Bean Simplicity with a capacity of 5½ gallons a minute.

# BEAN

## ORCHARD AND CROP SPRAYERS

### BEAN SPRAY PUMP CO.

15 Hosmer Street, Lansing, Michigan  
104 W. Julian Street, San Jose, California

Gentlemen: Please send me your latest sprayer catalog and full information on the Bean line for 1925.

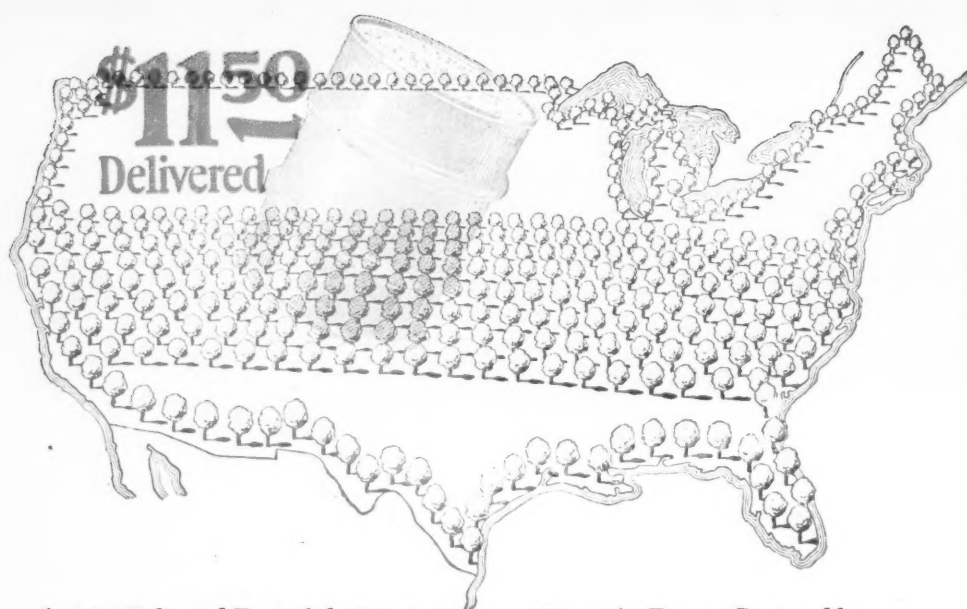
Kind of fruit \_\_\_\_\_ No. Acres \_\_\_\_\_

Name \_\_\_\_\_

Street or P. O. Box \_\_\_\_\_

Town \_\_\_\_\_ State \_\_\_\_\_





\$11.50 Delivered East of the Mississippi

Drum \$2 Extra—Returnable

Fall spraying with Scalecide controls psylla and peach leaf curl. Spring application controls aphids, pear thrips, leaf miner, case bearer and leaf roller. Either fall or spring spraying with Scalecide controls scale, bud moth, European red mite, fungus or blight cankers from which are spread fire blight, collar rot and root rot. And in addition, year after year use of Scalecide invigorates the trees. Furthermore, Scalecide is pleasant to use.

## Big Volume Lowers Cost

The volume of Scalecide used last year would spray enough bearing apple trees, set 40 feet apart, to bound the United States and make eight rows from the Atlantic to the Pacific. This big production makes possible the low price at which you can buy Scalecide. The new 15-gallon drum, costing \$11.50, contains enough Scalecide to spray as many trees, until they drip, as one 50-gallon barrel of lime-sulphur, applied with equal thoroughness. And it requires only half the time and labor to apply Scalecide.

Scalecide is not an oil emulsion but a miscible oil that mixes instantly with cold water and stays mixed without agitation.

Its continuous use for the past twenty years throughout the fruit-growing world has proven that it will not do injury such as has been so often attributed to oil emulsions and improperly made miscible oils.

On every tree, shrub and vine that sheds its leaves in winter—use Scalecide as *your* dormant spray. Then you will know that you have done all that can be done *at that particular time* by any dormant spray or combination of sprays. If your dealer doesn't carry Scalecide, show him this advertisement—or order direct from us. Send \$11.50 plus \$2 for each 15-gallon drum. The \$2 will be refunded upon return of drum.

### Carboleine

A miscible oil—has been in use longer than any oil spray on the market, except Scalecide, and kills scale as well as Scalecide even at a weaker dilution—and known to be safe. While it will not do all that Scalecide will do, neither will any other dormant spray. Price: \$20 per 50-gallon barrel including container, f. o. b. Hackensack, N. J.

### Oil Emulsions

While oil emulsions have not yet proven their value and safety, and we do not recommend them, we will supply them to you of a quality and stability not obtainable elsewhere. If you insist on using oil emulsions, let us quote you prices.

B. G. PRATT CO. Department 11 50 Church St. NEW YORK, N. Y.

# SCALECIDE

Copyright 1922 THE COMPLETE DORMANT SPRAY B.G. Pratt Co.

# SCALECIDE